THE

WOODS AND TIMBERS

OF

NORTH CAROLINA.

By P. M. HALE.

A COMPILATION FROM THE BOTANICAL AND GEOLOGICAL REPORTS OF DRS. CURTIS, EMMONS AND KERR; TO WHICH ARE ADDED INFORMATION OBTAINED FROM THE CENSUS BUREAU AND ACCURATE REPORTS FROM THE SEVERAL COUNTIES.

RALEIGH:
EDWARDS & BROUGHTON, PUBLISHERS.
1890.

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PUBLISHER'S PREFACE.

So abundantly supplied were the older States with native timber growth, that questions relating to its permanence appear not to have suggested investigation through a long period. In new States and in the Territories the absence of forests has been felt severely, and the supply of their needs added to home waste has made the forestry question prominent and of practical importance. Supplies have been found scarce, and prices have advanced to a degree that is sensibly felt by all classes of the population.

The forest wealth of North Carolina, it is believed, exceeds that of any State. Little was known of it, except to Botanists, until a very recent date. The exhibition of woods at the Atlanta Exposition by the State Department of Agriculture and by the Richmond and Danville Railroad Company attracted universal attention and admiration, and made it plain that the time is at hand when the forests of North Carolina, if properly worked, will yield larger income than all her beds of gold. Frequent inquiry from all sections of the country followed, and the exhibition made by the Richmond and Danville Company at the New England Manufacturers' and Mechanics' Institute has stimulated the public desire for information. The publisher hopes that this volume may supply it.

In 1860, the State published as part of the Geological Survey, then under the direction of the distinguished Dr.

Emmons of New York, a small edition of a volume known to Botanists in this country and in Europe as Dr. Curtis's Woody Plants of North Carolina. The publication placed North Carolina among the foremost of the States in respect to the completeness as well as the scientific accuracy of the knowledge of her singular botanical wealth, which had engaged the interest and study of the most famous European and American Botanists for nearly one hundred years. Its circulation was confined to scientists, and the volume has been long out of print. It is reproduced here in full.

To these Reports of Dr. Emmons and Dr. Curtis have been added the later observations made by Dr. W. C. Kerr, State Geologist since the death of Dr. Emmons, and now Geologist in charge of the Southern Division of the United States Geological Survey ; such information as was obtained in 1880 by the Census Department for publication in the Census Reports when printed ; and, perhaps more satisfactory than these, reports from the several counties of the State obtained during the present year. These are entirely trustworthy. An exceptionally large acquaintance throughout the State, and access for this purpose to the lists of correspondents of the Department of Agriculture, have made it comparatively easy for the publisher to obtain accurate information. The initials at the end of each county letter will be readily recognized as those of citizens well-informed and reliable, and with no private ends to serve.

An accurate map of the State, on which are traced all its railroad routes, will be of use to those whom business or pleasure may attract to North Carolina.

Raleigh, Dec. 20, 1882.

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PART I.

THE WOODY PLANTS

OF

NORTH CAROLINA.

GEOLOGICAL

AND

NATURAL HISTORY SURVEY

OF

North Carolina.

PART III.—BOTANY.

THE WOODY PLANTS OF THE STATE, WITH DESCRIPTIONS OF THE TREES, SHRUBS, AND WOODY VINES.

BY

REV. M. A. CURTIS, D. D.

REPORT OF THE STATE GEOLOGIST.

RALEIGH, JUNE 1ST, 1860.

To His Excellency, JOHN W. ELLIS,
Governor of North Carolina:

SIR: I herewith transmit the Report of the Rev. M. A Curtis, D. D., upon the WOODY PLANTS of this State.

The value of this Report is greatly enhanced by the fact that it embodies the labor of more than twenty years. Dr. Curtis, in reviewing the whole subject with a view to a publication of the results of his labor, has felt constrained to furnish descriptions of only the most conspicuous and important plants indigenous to the State; and of the less important ones a Catalogue simply, noticing, with each species, its geographical range in the State, and, where desirable, its economical or medicinal uses.

Notwithstanding the latter portion of his Report may thus appear to consist chiefly of technical names, and thus be of no general practical use, it will be regarded by the scientific public as a contribution of great value, not merely for its indication of the vegetable productions of this State, but also as containing a large amount of information not elsewhere to be found. The position of this State is such that it

forms the north and south limits of many interesting productions in Natural History, belonging both to the vegetable and animal kingdoms; and it has been regarded an important work to fix definitely the true north and south boundaries of species belonging to these kingdoms.

In view of these considerations, together with many others which will, no doubt, be suggested on reflection upon the whole subject, it is hoped that your Excellency, with the Honorable Gentlemen constituting the LITERARY BOARD, will give publicity to the labors of Dr. Curtis, who has consented to assist me in this part of the State Survey.

I am, Sir,

Your obedient Servant,

E. EMMONS,

State Geologist.

Dr. Curtis to the State Geologist.

To PROF. E. EMMONS, *Geologist of the State of North Carolina:*

DEAR SIR: In compliance with your request, that I would furnish, in connection with your general Survey of the natural resources of the State, an account of its vegetable productions, I have prepared the following paper upon the WOODY PLANTS of

North Carolina. I have brought these together in one view, because they are the most important, the best known, and can be more intelligibly arranged for general use, than upon a plan strictly scientific. Botanists will of course find fault with it; but as my sole purpose herein is to make this essay of popular service, and as intelligible as possible to those who know nothing of systems and would not take the time or trouble to master a scientific treatise, I have adopted the present course as the most likely one that occurred to me to accomplish the end proposed. It has its difficulties, as you will readily see, but you will at the same time confess, I think, that, though it might be better done, the end could not be so well attained but by some such arrangement. I must therefore crave your indulgence for this departure from established usage in this first portion of my Report.

I have felt somewhat hampered by the limits to which I was restricted, and, as it is, have unavoidably overrun them; but I hope, nevertheless, that nothing essential has been often omitted, either in the descriptions, or in noticing the valuable uses, of the various Trees, Shrubs, and Vines of the State. In instances where the plant is well known and needed no discrimination from similar or kindred species, I have omitted all description, as being in such cases superfluous. But whenever one is less known, or may be easily confounded with others, I have endeavored to present all the distinctive char-

acters by which it may be discriminated from them. How far I have been successful must be left to the proof by trial; but I am pretty confident that a person wholly unpracticed in this kind of investigation can, by means of the Tabular View given at the end of this Report, very soon learn to discriminate and find the name of most of the Woody Plants of the State.

I will state in conclusion, what you were not before aware of, that this Report is one of the fruits of your long continued service in the field of Science. My first knowledge of the elementary terms of Botany was derived from yourself and your distinguished Preceptor, Prof. EATON, at the beginning of your public career. Though I was then too young to be admitted to your course of instruction, an impulse was then given which never abated, and now, forty years afterward, returns back to you with this humble offering. The contribution is, therefore, most appropriately put into your hands by

Your friend and servant,

M. A. CURTIS.

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PREFACE.

THE Plants of North Carolina have long been considered by Botanists as unsurpassed in variety and beauty by those of any States of the Union, excepting a few of those which lie upon the Gulf of Mexico. The Flora of this State should properly be regarded as forming the transition between the Northern and Southern Botanical Districts, as it is within our boundaries that many of the Northern plants have their Southern limits, and some of those which form a peculiar feature of Southern vegetation commence. Of the latter species are the *Pond Pine*, several *Magnolias*, *Palmetto*, &c. There is still another circumstance which gives a much greater variety to our vegetation than could be derived from mere difference of 2½ degrees of latitude between her Northern and Southern boundaries. The Mountains on the Western border of the State are several hundred feet higher than any others in the Union, so that the difference of elevation between these and our sea-coast occasions a difference of vegetation equal to that of 10 or 12 degrees of latitude. Thus upon the higher summits are found species such as belong to the White Mountains of New Hampshire, those in the N. E. part of New York, and to Canada. The inter-

vening ranges of Virginia and Pennsylvania partake in part only of the same peculiarities, but the greater elevation of some of our summits permits the growth of some species which are unknown between them and the Northern regions above mentioned.

In the distribution of Plants over the State we have three distinctly marked Districts, as well characterized by their Flora as by their Geological features. As in the Geology of the State the peculiar formation of one District may penetrate, overlie, or underlie that of another, yet the predominating characters of each be sufficiently marked and striking to arrest the notice of the most casual observer; so it is with the vegetation of these Districts. The analogy of distribution between the objects of these sciences may be extended still further. For as, in the one case, we often meet with misplaced Rocks, so, in the other, the Botanist is sometimes surprised by meeting with species of Plants quite out of their proper range, and for whose location it is not always easy to account. Thus the *Cranberry*, an inhabitant of elevated regions and not uncommon in our Mountain Marshes, is also found, to a limited extent, in the low lands of the Northeastern part of the State. The beautiful *Calico Bush*, or *Ivy*, rarely found but in rocky regions, as in the mountains or along the rocky banks of watercourses, occurs abundantly in the Dismal Swamp, especially along the line of the Canal. The pretty *Roanoke Bell* (Mertensia Virginica), a native of the Mountains, is scattered along

the banks of the river from which, in this State, it derives its name, as far down as Halifax County. In this last case, and perhaps in some others, we may suppose that seeds have been carried down by streams which head in the mountains. But in regard to some species, as the fragrant *Wintergreen* or *Mountain Tea* (Gaultheria procumbens), they sometimes attain such a wide distribution in their new (?) position, and at such a distance from the larger streams, as to suggest a doubt whether they are not truly indigenous to the spots they occupy. Still, as above remarked, the general aspect of the vegetation of either region is no more affected by these rare exceptions, than is that of the geological features of a district by a few scattering bowlders. The most careless observer cannot fail to observe how essentially the vegetation changes, as he passes from our sandy low country into the red clay region of the middle country. The difference is as remarkable as that of the soils. The absence of the *Long-leaf Pine* marks the transition to the Middle Botanical District. A line drawn from Blakely on the Roanoke, in the direction of Cheraw on the Pee Dee, will very nearly indicate the Western termination of the Lower District; although the actual boundary limit between these two is as irregular as a line of sea-coast, which, very probably, this once was. Occasionally, as before hinted, the vegetation of the Lower District is found considerably overlapping that of the Middle, and the *Long-leaf Pine* to occur some miles within the red

clay region. Thus a patch of this tree may be seen on the gravelly hills eight miles west of Wadesboro, which is probably the most western limit of its appearance within the State. Not unfrequently also there are found small portions of land in the Middle District, very much resembling the savannas and low pine woods of the Lower, the soil being sandy, turfed with coarse grasses, and shaded with *Short-leaved Pines*. In these situations, which are met with as far west as Henderson County, will always be found some species of plants which, except in such places, are peculiar to the Lower District.

The Lower District might easily be divided into three Botanical regions, each characterized by certain species of plants of well defined range. These will be only indicated, as details are unnecessary to the purpose in view. The first region includes only the line of sea-coast which produces maritime species, or those which grow only within the influence of a saline atmosphere. These are not numerous, and the only ones of much note are the *Live Oak* and *Palmetto*. The second region extends inland as far as the *Long Moss* is produced. The third, from thence to the Middle District.

The Middle District reaches westward to the base of the Blue Ridge. In this the forests are characterized by a predominance of *Oaks*, as the Lower is by the presence of *Pines*. It is far less productive of rare and peculiar plants than either of the others. Though it furnishes some that do not belong to the

others, the great majority of them are common over a large portion of the Southern and Middle States. I cannot recall any one species which can be considered as giving a character to this district distinct from that of the States lying north or south of it. There are, indeed, a few of the smaller plants which are not found elsewhere, but these are so rare and inconspicuous as not to form a noticeable feature in the vegetation of this district.

The Upper or Mountain District is as peculiar and interesting in its vegetable products as it is attractive in its scenery. The ascent of every hundred feet presents new and varying species, until we reach the region of the dark and sombre *Firs*, where we have a vegetation almost entirely Northern. There is also a striking peculiarity in the vegetation of these higher regions, which can rarely fail to arrest the eye of a visitor from the Lower or Middle Districts, in the profusion of graceful *Ferns* and delicate *Mosses* that cover the earth, and of numerous and various colored *Lichens* that clothe the rocks and trees. These, for the most part, are identical with species found in the mountains of the Northern States, and many are common to similar situations in the Old World; though there are some which seem to be confined to our own mountains. In these orders of Plants this district abounds much beyond the product of all the rest of the State, and he who delights in their study could scarcely find elsewhere a more luxuriant field for observation or collection. But not

less peculiar, and what is still more likely to attract the attention of the common observer, are the variety and beauty of stately trees and ornamental shrubs, which are found in no other part of the State. Indeed, in all the elements which render forest scenery attractive, we may safely say that no portion of the Eastern United States presents them in happier combination, in greater perfection, or in larger extent, than do the mountains of North Carolina, especially in the counties of Yancey, Buncombe, Burke, and Haywood.

From the great elevation and extent of our Mountains, supplying many forms of plants proper to much higher latitudes, besides a large number peculiar to the Southern ranges, it is not surprising that these Mountains attracted the early attention of Botanists, and that they have continued to be visited by a larger number of them than has any other portion of our country. A brief account of these Botanists, and of those who have examined other parts of the State, will be an appropriate introduction to the accompanying list and description of the objects by them first brought to public notice.

William Bartram, of Philadelphia, visited the Mountains of Cherokee in 1776. He also passed through the lower section of the State. An interesting volume of his "Travels" was published in London, but the book has been long out of print.

André Michaux, under the patronage of the French government, visited the same region in 1787.

In the following year he explored twice the Mountains of Burke and Yancey counties, carrying away in the Fall 2,500 specimens of trees, shrubs, and plants. In 1794 he again visited the same region, ascending Linville, Black, Yellow, Roan, Grandfather, and Table Mountains. In the following year he twice passed over portions of the same. Traditions of this indefatigable and eccentric traveler are current in the western counties, and persons are probably yet living who remember him. The late Col. Davenport, of the Yadkin Valley, was his guide on several occasions. A very large and interesting portion of our mountain species was first discovered by Michaux, and published in his "Flora Boreali-Americana," which is yet a standard and classical work in Botanical literature. With rare exceptions his species have been since identified by other explorers.

Mr. FRASER, a Scotchman, made botanical collections in our mountains between the years 1787 and 1789. Under the patronage of the Russian government he explored them again in 1799, accompanied by his eldest son. It was on this journey that the splendid *Laurel*, or Rhododendron Catawbiense of Botanists, was discovered, which, with the varieties obtained by skillful cultivation, was for long the pride of the English florists. Both revisited the country in 1807. After the decease of the father in 1811, the younger Fraser returned hither and passed several years in diligent examination of the Mountains, annually sending large quantities of ornamental

plants and seeds to Great Britain. He is well and respectfully remembered by those who made his acquaintanee, espeeially in Burke County.

Mons. DELILE, French Consul at Wilmington, in the early part of this century, sent valuable collections of plants from the Cape Fear region to Paris, whieh are acknowledged in the writings of several European authors.

Mr. JOHN LYON, of Great Britain, was an assiduous collector of our plants, and contributed very largely of our most interesting speeies to the English gardens. He probably was in our mountain region previous to 1802, but of this I have no positive information. He, however, spent several years there at a subsequent period, and died at Asheville in September, 1814, aged forty-nine years. A plain marble stone marks his last resting-place in the graveyard at Asheville. A manuscript Flora, which he seems to have compiled for convenient use as a manual, from such works as had then been published on American plants, is now in my possession.

F. A. MICHAUX, son of the Michaux mentioned above, and who accompanied his father in some of his visits to this eountry, traversed a portion of our mountain district in 1802. The result of his explorations in various parts of the country is eontained in his large work on the "Forest Trees of North America," * illustrated with beautiful colored plates.

* An exquisitely beautiful edition of this work was published in 1857, by Rice and Hart of Philadelphia, in five volumes.

I am much indebted to this valuable work for information upon the economical value of our timber trees given in the following description of our Woody Plants.

FREDERIC PURSH, a German, author of a valuable "Flora of North America," and who traveled extensively in the Northern and Middle States, pretends to have extended his journeyings to North Carolina, but his statement is deemed rather more than doubtful.

Mr. KIN, a German nurseryman living at Philadelphia, visited our State in the early part of the present century. He was a man of little cultivation, not properly a Botanist, and his discoveries were published by others.

THOMAS NUTTALL, an Englishman, but long a resident in this country, a most accomplished Botanist, who has contributed as much as any one man to the discovery and elucidation of the floral treasures of North America, examined portions of our mountain and lower districts. He is the author of "Genera of North American Plants," and of many important botanical papers in the scientific journals of this country. He died in 1859.

H. B. CROOM, Esq., and Dr. H. LOOMIS, made a pretty careful exploration of the vicinity of Newbern, and their observations were published, in 1833, in a Catalogue of Plants of Newbern and vicinity. A second and enlarged Catalogue was printed in 1837 by Mr. Croom. In this the services of Mr. GEO.

WILSON are acknowledged for valuable contributions to the knowledge of plants around Newbern.

In 1833, I published, in the "Boston Journal of Natural History," an Enumeration of the Plants growing around Wilmington, the fruit of diligent examination made during a residence there of two years and a half. Occasional visits since made have increased the number of species known in that most interesting locality, the Flowering Plants and Ferns of which exceed one thousand.

Dr. JAMES F. MCREE, of Wilmington, has devoted much time to a study of the Plants of that neighborhood, and the completeness of the above Enumeration is not a little due to his observation and assistance.

The late Rev. Dr. L. D. VON SCHWEINITZ, of Salem, has contributed very largely to a knowledge of the Botany of this State, particularly in its lower orders, or those having no proper flowers, as *Mosses*, *Fungi*, &c. In these departments he was the most expert and accomplished Botanist that our country has produced. In 1821 he printed at Raleigh a small tract of twenty-seven pages upon the *Hepatic Mosses* or *Liverworts*, most of which he had observed near Salem. In 1820 he published in a scientific journal at Leipsic a paper upon the *Fungi* of North Carolina, containing descriptions of a large number of species previously unknown, some of which are illustrated by very good figures. A similar paper upon the *Fungi* of the United States, printed in 1831 in the Journal of the Philosophical Society of Philadelphia,

contains a large amount of North Carolina species not included in the former paper. These were the first treatises of the kind produced in this country, and the list of species given in the following report will embrace a large number derived from them. This learned and most estimable gentleman, a worthy descendant of the celebrated Count Zinzendorf, departed this life, February, 1834, at the age of fifty-four years.

The Rev. Dr. MITCHELL, during one period of his Professorship at our University, was an assiduous cultivator of botanical science, and had made a considerable collection of specimens, which he generously shared with Dr. Schweinitz and myself. I am indebted to him for several species which had otherwise been yet unknown to our North Carolina Flora. A species of Carex, named after him, commemorates his devotion to the beautiful science. This is a petty tribute to his name; but others have honored it in better proportion to its worth. MT. MITCHELL, the loftiest summit of the Black Mountain range, the witness of his laudable triumph when he first ascertained its surpassing height, and which alone saw the sad catastrophe of his death in the darkness of night and storm, is his noble monument and his tomb.

Dr. CYRUS L. HUNTER, of Lincoln County, has devoted considerable attention to the study of plants in his vicinity, and I am indebted to him for information which will be acknowledged in another place. He published in the Charlotte Journal (for 1834?)

a list of such plants as he had observed in his neighborhood.

Prof. A. Gray, of the University of Cambridge, and John Carey, Esq., of New York, examined the principal mountains of Ashe and Yancey in 1841, and detected several species of plants which had escaped the notice of previous investigators. An interesting account of this expedition may be found in an article by Prof. Gray in the American Journal of Science, vol. xlii, to which I am indebted for much of the information here given of the early explorers of our alpine district.

The same distinguished Botanist, with Mr. Sullivant of Ohio, in 1843, entered our mountains from Virginia, the former continuing along the range to Georgia; the latter leaving the State by the French Broad River. The results of this tour have not been formally published. Large collections, however, were made by Prof. Gray for the Botanic Garden at Cambridge; and two beautiful volumes of specimens of *Mosses* and *Liverworts* were prepared by Mr. Sullivant, which were gratuitously distributed among Naturalists in this country and Europe. In a subsequent year Mr. Sullivant made a botanical reconnoissance in the low country of North Carolina.

Mr. S. B. Buckley has also made valuable contributions to our knowledge of the Flora of Western Carolina. In 1842 he entered the State by the Hiwassee River, spending the summer in a careful examination of the principal summits and watercourses

as far as Yancey County. Several new species were detected by this gentleman and published in vol. xlv of Silliman's Journal. Since the above date he has made several visits to the same region.

Mr. RUGEL, a German collector of plants, spent some time in our mountains in 1842. His discoveries were published by Shuttleworth and others.

Mr. DOW, a young Botanist, traversed the whole length of our mountain range in 1844, but I have never learned if his observations and discoveries have been made public.

The writer of this, during a residence near the mountains in 1835–36, had occasional opportunities of visiting the high ranges in Burke and Yancey, as also the counties of Lincoln, Mecklenburg, and Caldwell. In 1839 he spent the summer in traversing the mountains from Ashe to Georgia. A visit of a few weeks was again made to Ashe and Yancey in 1845; and another in 1854 to Buncombe and Henderson. Besides these, a residence of some years in various portions of the middle and lower sections of the State, comprising in all about twenty years, has given him opportunities of becoming acquainted with the vegetable productions of the State, of which he has assiduously availed himself, and the results have been published in various journals in this country and England. The accompanying list of species contains all that is known of the plants of North Carolina,—a longer list than has yet been published of any State in the Union.

It may be expected, perhaps, that in enumerating those who have contributed to a knowledge of the natural productions of our State, I should not omit a notice of Lawson's "History of North Carolina," the first printed work devoted to this subject. But, besides that this book is now nearly inaccessible, there being but a single copy in the State, we cannot always recognize the objects described in it, the application of Indian names being lost, and that of English names rather variable and uncertain. So far as I have been able to authenticate species noticed by Lawson and other old journalists quoted in Dr. Hawks's "History of North Carolina," I have done so in the April number (1860) of the North Carolina University Magazine. The information upon the natural history of the State contained in their works is now of no scientific or economical value, and their errors in statement are not few.

In the following arrangement of our Woody Plants, I shall not be governed by established scientific rules, but shall adapt it, as well as I can, to the comprehension of those who know nothing at all of Botany as a science. I hope, in this manner, so to present our Trees, Shrubs, and Climbers, that the most, if not all of them, shall be easily recognized with very small expenditure of patience and study. The well-known popular names applied to most of the species and genera will greatly facilitate the success of this arrangement.

The above-mentioned Divisions will be subdivided

according to the nature of the fruit in each, some groups having *cones*, like the Pines; some, *nuts*, like Oaks and Hickories; others, *fleshy* or *pulpy fruit*, like the Apple and Plum. A tabular view of this classification will be given at the end of this Report.

*** The scientific names will in all cases correspond with those in Dr. Chapman's "Flora of the Southern United States."

THE

Trees of North Carolina.

TREES BEARING CONES.

PINES.—These have their fruit in large scaly *cones*, popularly called *burs*, and have evergreen needle-shaped leaves, two to five enclosed in a sheath at their base.

1. YELLOW PINE. (Pinus mitis, Michx.)—This, with us, is called *Short-leaved Pine* and *Spruce Pine*. The first is objectionable, because we have at least two species with shorter leaves; and the second, because another is more appropriately called by that name. I have, therefore, adopted the name by which it is known in the Middle States, and recommend its use here, as it is much to be desired that there be a greater uniformity in the popular designations of our forest trees. In the great confusion now prevalent, it is often quite impossible to ascertain what is meant by the names of our most common trees and other plants. This is, perhaps, the most widely diffused of all our Pines, it being common from New England to Florida, mostly in light clay soils. With us it is found from the coast to the mountains, but more rarely in the Lower District, and it enters into the composition of most of our upland forests. It is

from 40 to 60 feet high, with a circumference of 4 or 5 and even 6 feet. The limbs on the upper part of the tree are more inclined towards the trunk than those of our other species, so as to give somewhat of a pyramidal form to the top. The leaves are 2 to 5 inches long, generally two, but sometimes three, in a sheath. The cone or bur is the smallest of all our species, rarely attaining a length of 2 inches, the tips of the scales armed with slender short prickles. The heart-wood is fine grained and but moderately resinous; but the sap-wood soon decays. The timber is extensively used in house and ship building, though not deemed so valuable as that of the *Long-leaf*. When grown in very rich soils, I believe its timber is coarser than when raised in less fertile land.

2. Jersey Pine. (P. inops, Ait.)—This tree is generally confounded in this State with the preceding, and also called *Short-leaved Pine* and *Spruce Pine*. In some parts of the country it is known also under the names of *Cedar*, *River* and *Scrub* Pine. The name which I have adopted, after Michaux, seems to have originated from its being a prevalent tree in New Jersey, where it has its northern limit, and from whence it is found, on barren and gravelly hills, to the upper part of Georgia. In such situations it is found in the Middle and Upper Districts of this State, but nowhere very abundant. It is from 20 to 40 feet high, and 12 to 15 inches in diameter, with rather distant, spreading and drooping branches. The young branches are smoother in this than in

other species. The leaves are two in a sheath, 1 to 2 inches long, about half the length of those of the preceding species, while the cones are considerably larger than in that, being 2 to 2½ inches long, and armed with longer and stouter sharp prickles. This tree is too small, often crooked, and generally with too much sap-wood, to be of any value.

3. Prickly Pine. (P. pungens, Michx.)—The name here given is but a translation of the scientific one, as I could never learn that it was distinguished from the *Yellow Pine* by the inhabitants of the region where it grows. In some books it is called *Table Mountain Pine*, because it was originally supposed to be pretty much confined to that mountain and its immediate neighborhood. But as I have seen it from the mountains of Virginia and Georgia, and from Pilot Mountain in this State, far east of the Blue Ridge, and have found it common on all the eastern spurs of the Blue Ridge (never west of it), in the northern portion of our mountain range, such a name is too local to be at all appropriate. This species is, however, the least widely diffused of any North American Pine. The tree is not very symmetrical, is from 30 to 50 feet high, and 12 to 20 inches in diameter. The leaves are in *pairs*, as in the two preceding species, but much thicker and stiffer than in those, and about 2½ inches long. But the cones give the chief peculiarity and interest to this Pine. They are of a light yellow color, very compact, 3 inches long and 2 inches broad at the base, the scales armed

with very broad strong sharp spines, which are one-sixth of an inch long and bent toward the top of the cone. In the strength and sharpness of these spines we have no other species with which we can compare this. I have never learned that the timber of this tree is of any special value.

4. Pitch Pine. (P. rigida, Mill.)—Generally known by this name, but, according to Michaux, sometimes called *Black Pine* in Virginia. I think it is, in North Carolina, confounded with the *Yellow Pine*, as I have not heard any distinctive name for it, though its leaves are in *threes* (rarely in fours), 3 to 5 inches long, and more rigid than in the latter. The tree is 30 to 50 feet high, with a rough blackish bark, the branches numerous and occupying two-thirds of the trunk, thus rendering the wood very knotty. The cones are 2 or 3 inches long, of a light brown color, often growing in clusters of 3 to 5, and the scales having sharp reflexed prickles. The wood is compact and heavy, filled with resin, though when grown in low grounds it is much lighter and has much more sap-wood. It is a good deal used in some parts of the country, but being inferior to the *Yellow Pine*, and much less common with us, it is not deserving of much consideration. It is nowhere common in this State, and I have not observed it anywhere east of Lincoln county, though it is probably scattered sparingly through the Middle District. It is found northward as far as New England, and southward, I think, to Georgia.

5. *Pond Pine.* (P. serotina, Michx.)—This has considerable resemblance to the *Pitch Pine*, but is as remarkable for its scattered branches as that is for its crowded ones. They are, however, in no danger of being confounded in this State, as I do not think they are found in the same sections. But it is very frequently confounded in the low country with the *Loblolly Pine*, though very readily distinguished from that by its cones. It is common in the small swamps or bays of the Lower District, in company with *Sweet Bay*, *Sour Gum*, &c., and occasionally in similar situations in the Middle. It sometimes covers pretty large tracts of rich swampy and peaty lands, but never, I think, constitutes any extensive forest. In some localities it is called *Savanna Pine*. The leaves of this species are in *threes*, and 5 to 7 inches long. The cones are remarkable for their short form, compared with their size, being about 2½ inches long and 5 in circumference at their base, armed with very short fragile prickles. They grow in clusters, often surrounding the branch, are of shining light brown color, and remain closed until the second year. They are deemed ornamental enough to grace the mantel in some houses. This tree is generally about 40 or 50 feet in height, but in favorable soils rises as high as 60 and even 80 feet. The wood is of better and more durable qualities than that of the *Loblolly*, and is occasionally used for the masts of small vessels. It is not known to exist north of this State.

6. Loblolly or Old Field Pine. (P. Tæda.)—

This tree has its northern limit in or near the District of Columbia, gradually becoming more abundant to the southward, until, in this State, it is the most common Pine, next to the *Long-leaf*, in the Lower District. It is there found wherever the soil is dry and sandy, as well as in some of the smaller swamps; but is replaced by the *Yellow Pine* on clayey and gravelly soils. In exhausted fields out of cultivation it almost invariably springs up, which gives the origin of one, and in this State the most common, of its names. Its leaves are from 6 to 10 inches long, clustered by *threes* (very rarely 2 or 4), in a sheath. The cones are 3 to 5 inches long, the scales armed with rather strong sharp prickles. The trunk rises to the height of 50 and 70 feet, with a diameter of 2 and 3 feet, and has a spreading top. The wood is sappy and coarse-grained, liable to warp and shrink, and soon decays on exposure. It is among the least valuable of our Pines, but is sometimes applied to inferior uses. It affords a good deal of Turpentine, which is less fluid than that from the *Long-leaf*. This tree extends somewhat into the Middle District.

I am indebted for the knowledge of an important variety of this tree, known as the *Swamp* or *Slash Pine*, and about Wilmington as *Rosemary Pine*, to some articles in Russell's Magazine, written by Mr. Edmund Ruffin, of Virginia, who has made a careful examination of the characters and habits of our southern Pines. He says: "This [Slash Pine] tree grows only on low and moist land, and is the better

for timber, and grows larger in proportion to the greater richness of the land. It is the principal and largest timber Pine in the original forests of all the low, flat and firm but moist lands bordering on Albemarle Sound, and also farther South; and I have seen it growing as well, but much more sparsely, on the rich swampy borders of the Roanoke and in the best Gum lands bordering on the Dismal Swamp, and some on the low bottom lands of Tar River. Among the other gigantic forest trees on the rich and wet Roanoke Swamps (on the land of Henry Burgwyn, Esq.), mostly of Oak, Gum, Poplar, &c., the few of these Pines which yet remain, tower far above all others (20 feet or more) so as to be seen and distinguished at some miles' distance. I have visited several standing trees and the stumps of others which had been cut down, which measured nearly or quite five feet in diameter, and were supposed to have been from 150 to 170 feet in height. But the sizes and heights of the trees may best be inferred from the list below of hewn (or squared) stocks, which was furnished to me from Mr. Herbert's* timber accounts. These stocks were cut in Bertie county, made the whole of one raft which was then (May, 1856,) on its passage through the Dismal Swamp Canal to New York. The stocks were thence to be shipped to Amsterdam for naval construction, under a contract with the Dutch government.

* Of Virginia; a large contractor for the supply of timber to the Navy Yards.

	Length.	Inches Square.	No. of Cubic Feet.
1	47	25	204
2	66	19	165
3	86	30	537
4	79	31	527
5	88	23	337
6	65	20	181
7	74	26	347
8	80	26	376
9	68	24	272
10	58	22	195
11	86	30	537
12	58	30	363
13	74	26	347
14	74	26	347
15	70	28	381
16	70	27	368

"But even the longest of these stocks do not approach the magnitude of one which was cut at a previous time in Bertie and sold in New York by Mr. Herbert. This was 80 feet in length and 36 inches square at the lower end. He sold it to a dealer for $500, and the buyer resold it for $600. This stock did not retain its stated diameter (at the butt) to its upper extremity, but there was from 28 to 30 inches square. All of these stocks were nearly all of heart-wood. Of course this condition permits but little sap-wood, and that only in the angles of the squared stocks. Thence, also, it follows that the proportion of heart-wood in these trees must be very

large. The timber must be resinous, or it would not be good; and it must be durable, or it would not serve for the masts and other great spars of ships of war, exposed to alternations of wetting and drying, and for which the best materials only are permitted to be used. The grain of this heart-wood is not generally very coarse, but more so than the *Long-leaf*, and still more than the *Short-leaf* [or] *Yellow Pine*."

7. Long-leaf Pine. (P. australis, Michx.)—The invaluable tree by which the country, and this State especially, have so largely profited, is generally known among us by the name here given, though it sometimes is called *Yellow Pine*. In the navy and dock yards of the country it bears the latter name, though this designation there includes also the *Swamp* or *Rosemary Pine*, as well as the species first described in this list. It begins to appear in the southeastern part of Virginia, and from thence to Florida it is eminently the tree of the lower districts of the Southern States, occupying nearly all the dry sandy soil for many hundred miles. It is from 60 to 70 feet high, in favorable situations still higher, and 15 to 20 inches in diameter. The leaves are 10 to 15 inches long, on young stocks sometimes much longer, and clustered on the ends of the branches like a broom. The cones are 6 to 8 inches long. The wood contains very little sap. The resinous matter is distributed very uniformly through it, and hence the wood is more durable, stronger, and more compact; which qualities, in addition to its being of fine grain,

give it the preference over all our Pines. The quality of the wood, however, depends upon the kind of soil in which it is grown, as in a richer mould it is less resinous. This inferior kind is, in some places, distinguished as *Yellow Pine*,—another case in point, illustrating the vague and indiscriminate application of the popular names of our forest trees. In some soils the wood is of a reddish hue; and this, in the Northern dock-yards, is denominated Red Pine, and considered better than the others. I am informed that trees which have a small top indicate a stock with the best heart-wood.

The great value of this tree in both civil and naval architecture is too well known to justify a full enumeration of its uses, and statistics of trade in it belong rather to a gazetteer than to an essay like this. But it is not the wood only that gives value to this tree. The resinous matter, in various forms, is shipped from our ports in large quantities to all parts of the United States and to foreign countries. *Turpentine* is the sap in its natural state as it flows from the tree. When it hardens upon the trunk, and is gotten off by proper implements, it is called *scrapings*, of very inferior value to the virgin article. *Tar* is made by burning the dead limbs and wood in kilns. *Pitch* is tar reduced about one half by evaporation. *Spirits of Turpentine* is obtained by distillation from turpentine, including scrapings. *Rosin* is the residuum left by distillation. The greater part of these articles in the markets is derived, I believe, from this State.

Large tracts of this Pine are sometimes suddenly destroyed, as by a blight, to the irreparable injury of the owners, as the forests cannot be reproduced in a lifetime. From the great value of the tree its destruction has attracted more especial notice; but our *Yellow Pine* (P. mitis) is subject to the same casualty. In Europe the same kind of fatality happens to the *Firs*. The mischief is caused by swarms of a small insect penetrating through the bark into various portions of the stock, and against which there is no remedy yet discovered. Other species of insect sometimes attack the Oaks, and effect a similar destruction.

8. White Pine. (P. Strobus, Linn.)—This beautiful tree, of such immense value to Canada and New England, extends along the Alleghanies to our own mountains, where it is found in considerable quantities, forming peculiar and handsome forests in the rich elevated valleys, especially of Ashe and Yancey. It is found as far south as Georgia. Though at the North this tree is as important, and its timber as extensively used, as our own *Long-leaved Pine*, yet from its inaccessibility in our mountains it has no marketable value with us, and does not seem to be much used in the region where it grows.

There are peculiarities about this tree which distinguish it at first sight, and at any distance, from all our Pines, in the pale green color of its foliage, the smooth, light bark of the trunk, and the circular disposition of the limbs, which gradually diminish in

length toward the summit, so as to give this the symmetry of a Fir more than of a Pine. The leaves are also *five in a sheath*, which is the case with no other of our Pines. In favorable situations at the North, this tree has been known to reach a height of 180 feet, with a diameter of 7 feet. In our mountains it is found from 60 to 70 feet high, with a proportional diameter. The wood is light, soft, free from knots, very easily worked, and durable, though not very strong, and is applied to a far greater variety of economical uses than that of any other Pine.

FIRS AND SPRUCES.—These are distinguished from the PINES by their leaves growing singly upon the branches, (not included by twos, threes, &c., in a common sheath,) and by their cones, which are composed of thin scales without prickles, somewhat like *Hops*. They are all possessed of singular beauty, and are indispensable to the perfection of artificial groves and parks. It is only in cool and moist situations, however, that they can be fully developed; though they thrive and are very ornamental in private grounds through the Middle District of the State. They are impatient of the heat in the Lower District, and unless well shaded there, are apt to remain dwarfed, or to die out.

1. BALSAM FIR. (Abies Fraseri, Pursh.) — This is the handsomest of our Firs, and is very similar to the *Silver Fir* of Europe, though every way smaller; the latter sometimes attaining the height of 150 feet,

while ours seldom reaches 40, with a diameter of 12 to 15 inches. It is an inhabitant of the higher mountains from Pennsylvania southward as far as this State Farther north it is replaced by a larger but very similar species known as the *Canada Balsam* (A. balsamea). It is not uncommon on our highest summits, but I think is not found upon any which do not exceed 4,000 feet above the sea. Some of these summits appear to be occupied almost exclusively with forests of this tree, and the dark color of these and of masses of the next species has probably given its name to the Black Mountain. Several knobs and ranges south of the French Broad River are called Balsam Mountain from the prevalence of this tree upon them. When not too much crowded, this has a close pyramidal top. The leaves are of a bright green above, and silvery white beneath. When the branches are loaded with cones, (which in this species only stand erect,) the tree is very beautiful. The cones are from 1 to 2 inches long. The timber is of little value, though sometimes sawed or hewed out for mountain cabins; yet if valuable, it could not, from its location, be available. The turpentine or *balsam* is a clear thin liquid, obtained from small blisters on the bark of the trunk by means of sharp horn spoons or scoops inserted into their lower side. It is of an acrid taste, and is much used by the inhabitants on cuts and sores; but the application is painful, and as likely to promote inflammation as to allay it.

2. Black Spruce. (A. nigra, Poir.)—Common in our mountains, especially on the Black, but at a lower elevation than the preceding species. It extends from this State along the Alleghanies to New England and Canada. In our mountains it is sometimes very improperly called *Juniper*, and it is, I believe, what is most commonly and absurdly called *He Balsam*. With us it is a small tree of darker green foliage than the preceding, but of similar form. In higher latitudes it has a height of 70 or 80 feet, and is there an elegant tree. The wood has strength, lightness and elasticity, and is much used both in the Northern States and abroad, for the yards and topmasts of vessels. The drink so popular at the North, and known as *Spruce Beer*, gets its name from the use of the small branches, chiefly of this species, which are steeped in the brew.

3. White Spruce. (A. alba, Michx.)—This has about the same range in the United States as the *Black Spruce*, but does not extend quite so far to the northward. It is rather rare in our mountains, but is occasionally met with in similar situations with the other, and with which it is generally confounded by the inhabitants. In one instance I heard it called *Lavender*, a name belonging to a garden herb. It is very distinct from the preceding, and its whole aspect is lighter; the summit of a similar pyramidal form, but less compact, is of less size, with slender and more drooping branchlets, the pale green leaves of more delicate form, and the cones narrower. The

wood is employed for the same purposes as that of the *Black Spruce*.

4. Hemlock Spruce. (A. Canadensis, Michx.)—Universally known in our mountains as *Spruce Pine*, though the name here preferred is not unknown. The latter is a very common appellation of the *Yellow Pine* in this State. The Hemlock is found as far north as Hudson's Bay; whether south of North Carolina I have not learned. It is almost entirely confined, in the mountains, to the borders of torrents and cold swamps, but extends down to their very base. This is a larger tree than the preceding Spruces, but does not attain here, as in higher latitudes, the stature of 70 or 80 feet, and a diameter of 2 or 3 feet. In its light spreading spray and delicate foliage it is a more graceful tree than the others. The leaves are light green above and silvery beneath. They spread two ways upon the branches, while in all the other Spruces they spread from every part of them. The cones are ½ to 1 inch long, and gracefully depend from the ends of the branchlets. The timber is used to some extent at the North, but is of inferior importance. The bark, however, is extensively and almost exclusively used for tanning in some parts of New England. Though inferior to Oak bark, it is said that the two united are preferable to either alone.

White Cedar. (Cupressus thyoides, Linn.)—In North Carolina, and some other portions of the South, this seems to be known only under the name of *Juniper*. But as it is not Juniper, I do not hesi-

tate to reject the name. The one above given is in common use in the Middle and Northern States wherever the tree is found. The true Juniper (Juniperus communis) of Europe and the Northern States is related to our *Cedar*, and its fruit is an aromatic berry; while that of the present species is a small, dry, woody cone, composed of scales which spread open in maturity after the manner of a Pine or Cypress bur. This tree is found from Florida to New England. In our State it is confined to swamps in the Lower District, where, in some places, it is very abundant. It is 70 or 80 feet high, with a diameter of 2 or 3 feet. The various uses to which its wood is applied make it one of the most valuable trees in the country. It is fine grained, soft, light and easily worked, and after seasoning acquires a light rosy tint. It has a strong aromatic odor, and the flavor given to water kept in buckets or piggins of this material is generally esteemed. From the little effect produced upon it by moisture or dryness, as well as for its lightness and freedom from splitting, the shingles made of it are, in some places, preferred over all others, and last from 30 to 35 years. Where it abounds, it is used in the frames of buildings, it being durable and mostly free from worms. In cooperwork it is extensively used, and has been found very serviceable for vessels in which to preserve oils. Charcoal for gunpowder is made from the young stocks—lampblack, lighter and more deeply colored than that from Pine, is made from the seasoned wood

—rails for fencing, made of the young stocks deprived of their outer bark, will last from 50 to 60 years.

N. B. The *Red Cedar*, according to its natural affinity, should be placed in this Group; but as its fruit is what is popularly called a *berry*, the present mode of arrangement requires its transfer to the Group having that kind of fruit. The *Arbor Vitæ*, also belonging here, may be found among the SHRUBS.

CYPRESS. (Taxodium distichum, Rich.)—This tree, so well known under this name only, needs no specific description, and I will only remark that it is the only one in this group of trees that has not evergreen leaves. Its range is along the lower region of the Atlantic and Gulf States, from Delaware to Texas. In this State it has about the same range as the *White Cedar* and *Long-leaf Pine*, but is always confined to swamps. It is remarkable for its large dimensions as well as for its various uses. Its height with us is from 60 to 100 feet, with a circumference above the swollen base of 20 to 36 feet, though in the original forests of the country it has still larger dimensions. The wood has much strength and elasticity, is fine grained, lighter and less resinous than that of the Pines. Heat and moisture affect it much less than most of our timbers, and it is therefore particularly valuable in those parts of the State where both these agents have peculiar force. The timber has been much used in some places for the frame and woodwork of houses, and is said to be twice as durable as *White Oak* or *Pine*. The shingles made of it are of

the most valuable kind, and will last 40 years. The business of making these is a very profitable branch of industry in the lower parts of the State. For fencing and for water-pipes the wood is of high value.

There are three varieties of this tree recognized by those who deal in its timber—the *Red*, *Black* and *White* Cypress, characterized by the different color of their heart-wood. The *Red Cypress* has its heart of a reddish tint, is preferable to the others for timber, and cannot be split. This variety is easily recognized by its straight trunk (not always having a swollen base), generally with a small top, and by the wounded bark having a reddish tinge. The *Black* and *White* Cypress cannot, so far as I know, be discriminated without the aid of the axe. The *Black* has its wood duskier and heavier than the *White*, which is less resinous. According to MICHAUX, the latter grows in land constantly inundated, and the former in drier situations; but I am assured by others, that all three varieties may be found in precisely similar situations.

The foliage of this tree usually spreads in only two directions from the branchlets, like that of the *Hemlock Spruce;* but there is a variety, not uncommon in some localities, especially upon the wet savannas near Wilmington, on which the leaves are very small, growing upon four sides of the branchlets and pressed down upon them, much like those of the *Cedar*.

Cypress Knees, growing from the roots of the tree to a height corresponding with the usual depth of the water, and constituting a singular peculiarity in

Cypress swamps, are, I suppose, the result of hypertrophy. Whatever be the economy or final purpose of these excrescences, there are probably few of the present day who will endorse the theory of St. Pierre, that they were designed to protect the trunk against damage from icebergs!

The Cypress has not ordinarily a very attractive form in our swamps; but when standing alone in favorable situations, it has a regular pyramidal top and is of imposing beauty. In the Bartram Garden, near Philadelphia, I have seen a stock (over 100 years old) of such exquisite symmetry, that I could not be persuaded it was a Cypress, until I had satisfied myself by a close inspection.

NUT TREES.

The next GROUP to be noticed is the most important, whether considered in reference to its numbers or its economical value, in the whole circle of Forest Trees. There will be included in it all those which bear a fruit popularly called NUTS, without reference to the more restricted scientific meaning of the word. This Group will thus include the Oak, Beech, Chestnut, Hickory, Walnut, and Buckeye.

OAKS.—This genus of trees contains more species than any other in our country; and of these there is a larger number in North Carolina than in all the

States north of us, and only one less than in all the Southern States east of the Mississippi. Some of the species, however, hardly rise to the dignity of trees, though I shall bring them all together in this place, where they will most naturally be looked for.

For the better understanding of the species, they are divided into two Sections. The first is that of the *White Oaks* — characterized by the *acorns* being *annual*, the foliage of a pale or grayish aspect, and without bristles at the ends of the leaf divisions; the bark of an ashy hue, and the wood generally lighter colored and of more compact texture than in the other Section. The second Section has acorns *biennially*, and the leaves (except in the *Live Oak*) are pointed with a bristle at the end of each division.

Section I. is again arranged in two Divisions:—the *first* having for its type the common *White Oak*, characterized by the leaves being deeply cut from the margin toward the central nerve. The second has for its type the *Swamp White Oak*, in which Division the leaves are generally larger than in the first, and only scalloped or round-toothed on the edge. The species of the *White Oak* Section are, then, as follows:

Division 1*st.*	*Division* 2*d.*
White Oak, (Quercus alba.)	Swamp White Oak, (Q. Prinus.)
Post Oak, (Q. obtusiloba.)	Chestnut Oak, (Q. Castanea.)
Over-cup Oak, (Q. lyrata.)	Chinquapin Oak, (Q. prinoides.)

1. White Oak. (Quercus alba, Linn.)—This is found from Canada to the Gulf of Mexico, and ap-

pears to be universally known by the name here given,—one of the few instances among the Oaks, in which there is not more or less confusion of popular names, so that there is no need of offering a specific description of it. It is found in this State from the coast to the mountains, but is most abundant in the Middle District. In the Lower it avoids the barrens, and is found chiefly on or near the borders of swamps. It is only in the most favorable situations that this tree rises to the height of 70 or 80 feet, with a diameter of four or five. It is then, with its light foliage, compact and even head, and straight shaft, one of the most imposing trees in our forests. It is, however, seldom met with in our State having a diameter of more than 2 feet, though I have seen stocks here with a diameter of 3 feet. This is probably of more general use, and more extensively serviceable, than any other of our Oaks, it being valuable for house frames, for mills and dams, vehicles, agricultural implements, coopers' ware, ship-building, and for all purposes where strength and durability are required. The bark has been deemed by some tanners as the best kind for preparing leather for saddles and similar objects. It is sometimes used medicinally as a tonic and astringent.

The variety of this species known as the *Scaly Bark White Oak* is distinguished by the thin plates of bark that scale off from the trunk. I have not learned if its timber differs essentially from that of the other.

2. Post Oak. (Q. obtusiloba, Michx.) — The northern limit of this is in New Jersey, but it is not abundant and flourishing north of Maryland. From thence southward it enters largely into the composition of the forests which cover the dry and poorer soils of the Middle Districts of the South. In the Lower Districts it is less common, being mostly confined to the region of swamps and lands that have gone out of cultivation. With us it does not appear to be known under any other name than the one given above, and by which it is most generally designated; but it is elsewhere sometimes called *Iron Oak* and *Box White Oak*. The leaves are more coarsely cut than those of the *White Oak*, their divisions often enlarged at their outer ends, rather rough on the upper side, and with a gray down underneath. The acorns being very sweet and much eaten by wild turkeys, it is in some localities called *Turkey Oak*. This tree is rarely found as high as 50 feet, and with a diameter of 18 inches, but I have seen it with a diameter of 26 inches. Hence it cannot be employed for all the purposes for which the *White Oak* is used, although in fineness of grain, strength and elasticity, it is superior to it. It is serviceable for fence-posts, (hence its name,) for the work of wheelwrights and coopers, and is used advantageously for the knees in ship-building. For the staves of liquor-casks, this and the *White Oak* supply material far superior to any other of our Oaks.

3. Over-cup Oak. (Q. lyrata, Walt.) — This is

unknown north of this State, and does not seem to be common anywhere. In this State I know of its existence only in the rich swampy lands of the Neuse and Cape Fear and their tributaries as far up the country as Chatham and Orange. The foliage has more resemblance to that of the *Post Oak* than of any other, for which reason it is, farther south, called *Swamp Post Oak*. It is also sometimes called *Water White Oak*. The acorn is almost wholly enclosed in its cup, (whence its name,) by which character this tree may easily be distingnished from all others. It sometimes attains the height of 80 feet and a diameter of 2 and 3 feet, and is then a majestic tree. The wood is inferior to that of the two preceding species, yet is sufficiently compact to be serviceable, if it was more accessible and more extensively diffused.

4. Swamp Chestnut Oak. (Q. Prinus, Linn.)—Not known north of Pennsylvania, but is pretty common in the maritime parts of the Southern States, where it is met with in the rich soils of the river swamps. With a height of 80 or 90 feet and proportional diameter, a straight trunk and expansive tufted summit, it forms a beautiful and majestic tree. The leaves are 6 to 8 inches long, broader toward the outer end, with coarse rounded teeth on the edges, and pale down underneath, and of that ashy hue which distinguishes all the species of this section of Oaks. The acorns are about 1 inch long, nearly half covered by the cup, and with a stem about $\frac{1}{2}$ inch long. In economical value this can hold but a

second or third rank among the *White Oaks*. The timber has strength and durability, and is therefore employed for various purposes; but it is more porous than that of *White* or *Post Oak*. It has a straight split and shreds easily, and is therefore employed, especially by the negroes, in the making of baskets and brooms. Rails from this tree will last 12 or 15 years, and the fuel is considered valuable.

We have two varieties of this tree, so well marked that some botanists have regarded them as distinct species. But our best living botanists now consider them as variations from one type caused by difference of soil and situation. They are as follows:

Swamp White Oak. (Var: discolor, Michx.)—It is generally known throughout the United States by this name, and takes the place of the *Swamp Chestnut Oak* as we proceed inland from the range of the latter, and is found on the edges of swamps and inundated banks of rivers, not in the open and drier forests. It is a handsome tree of 70 or 80 feet high, with luxuriant foliage, the silvery whiteness of the underside of the leaves beautifully contrasting with the bright green of the upper surface, when they are stirred by a gentle wind. The leaves are 5 or 6 inches long, in form like the preceding, but with the marginal teeth more unequal. The acorns are supported on a stem 1 to 3 inches long, by which character this variety may be easily distinguished from every other Oak in this section. The wood is strong and elastic, and heavier than *White Oak*, to which it

nearly approaches in value; though, not being common, it is much less used in the arts.

Rock Chestnut Oak. (Var: monticola, Michx.) — This is sometimes called *Rock Oak* and *Chestnut Oak*, and is found as far north as New England. It is an inhabitant only of high rocky or gravelly situations, and hence occurs only in the Middle and Upper Districts of this State. It is a showy, symmetrical tree in favorable situations, with a luxuriant foliage, sometimes attaining a height of 50 or 60 feet, and a diameter of 3 feet; but, from the usual barrenness of the soil where it grows, it is seldom seen of these dimensions, and is commonly not more than 30 or 40 feet high. In the leaves and fruit it differs very slightly from the *Swamp Chestnut Oak*. The timber is valuable but not equal to *White Oak*, its pores being more open. In ship-building it is used, in some places, for the lower part of the frame, for knees and ribs. It has a reddish tinge like that of *White Oak*. For fuel it is inferior only to *Hickory*. The bark is among the best for tanning

5. Chestnut Oak. (Q Castanea, Willd.) — Not uncommon in the Middle and Western States, but it occurs very scatteringly in the Southern. I have not noticed it in North Carolina, but Michaux mentions a single tree seen by him on the Cape Fear, a mile from Fayetteville. He also found it on the Holston and Nolachucky rivers in East Tennessee, and it may perhaps be found on those streams in the western part of our State. The tree rises to a height of

70 and 80 feet, with a diameter of 2 feet, the branches rather erect than spreading. It is so sparingly diffused, that the value of the wood has never been tested; but its excessive porousness promises poorly. It has a yellowish tinge, and is therefore known in some localities under the name of *Yellow Oak*. This species is often confounded with the *Swamp Oaks* described above, which it certainly resembles; but its leaves are narrower, shaped more like those of the Chestnut, (whence its popular name,) with the teeth nearly sharp; and its acorns are only about two-thirds of an inch long. With its fine form and handsome foliage, this would be very ornamental in private grounds.

6. Chinquapin Oak. (Q. prinoides, Willd.)—Sometimes called *Dwarf Chestnut Oak*. Its foliage is somewhat like that of the *Rock Chestnut Oak*, and also has some likeness to that of the *Chinquapin*, which gives it its common name. It is a mere shrub, 2 to 4 feet high, of no value, and is here mentioned only to give a complete view of the genus. It is found very sparingly in the Lower District, but is not uncommon upon poor soils in the upper parts of the State.

Section II. contains three distinct Divisions; the *first*, with leaves narrow and entire;—the *second*, with leaves broad, generally entire, and pear-shaped; the *third*, with leaves broad and cut into several segments.

Division 1st.

Live Oak, (Quercus virens.)
Willow Oak, (Q. Phellos.)
Shingle Oak, (Q. imbricaria.)
Laurel Oak, (Q. laurifolia.)
Upland Willow Oak, (Q. cinerea.)

Division 3d.

Spanish Oak, (Q. falcata.)
Black Oak, (Q. tinctoria.)
Scarlet Oak, (Q. coccinea.)
Red Oak, (Q. rubra.)
Scrub Oak, (Q. Catesbæi.)
Bear Oak, (Q. ilicifolia.)

Division 2d.

Water Oak, (Q. aquatica.)
Black Jack, (Q. nigra.)

7. Live Oak. (Q. virens, Ait.)—Well known under this name wherever it exists, and needing no description. It is found along the sea-shore from near Norfolk, Va., to the coast of Texas. It is commonly 40 or 50 feet high, and 1 or 2 feet through the trunk. Of all the Oaks this is the most highly prized for ship-building, the timber hardening with age, and being closer grained and more durable than any other. The bark also is excellent for tanning.

8. Willow Oak. (Q. Phellos, Linn.)—This beautiful tree, remarkable for the narrowness of its leaves, which gives the foliage much the appearance of that of a *Willow*, and by which it is easily recognized at considerable distance, extends north as far as New Jersey. It affects cool moist situations, and is not uncommon on the borders of swamps in the Lower District, where it rises to the height of 50 to 60 feet, with a diameter of 2 feet. In the Middle District it is more scatteringly found in similar situations. It is more to be admired for its beauty than its use, as the wood is very coarse grained, and ill

adapted to purposes requiring much strength and durability; though it is said to answer tolerably well, if thoroughly seasoned, for the felloes of wheels.

9. Laurel Oak. (Q. laurifolia, Michx.)—This is a stately tree, of similar dimensions to the preceding, which it somewhat resembles, though the leaves are neither so long nor narrow, and are not always entire. It holds a middle place, in its general appearance and qualities, between the *Willow Oak* and narrow leaved *Water Oak*. The acorn resembles those of the latter. I am not aware that it has any distinctive name in this State, as it seems to be generally confounded with one or other of the species just mentioned. In South Carolina along a portion of the Pee Dee, it has a local name of *Darlington Oak*. The English name which I have chosen is only a translation of the botanical name. I believe this tree is not found north of this State, but it is common southward to Florida. It is an inhabitant of our Lower and Middle Districts in similar localities with the preceding, but flourishes well in higher and drier grounds, and is a common and much admired shade tree in towns and villages, especially in the lower parts of the State.

10. Shingle Oak. (Q. imbricaria, Michx.)—This takes the place of the preceding Oak in the Upper District, not being found east of Burke and Wilkes. From thence westward it becomes more abundant along the larger water-courses, especially those which flow to the west, as the Pigeon and Hi-

wassee. Its northern limit is in western Pennsylvania. It is more common in the Western States, as far north as Illinois, and is there known by the names of *Jack Oak*, *Black Jack Oak*, *Laurel Oak* and *Shingle Oak*. In those parts of our State where it occurs, I have heard it called only *Water Oak*, a name very generally applied elsewhere to a very different species. This is from 40 to 50 feet high and 12 to 15 inches in diameter, branches low, and casts a thick shade with its dark crowded foliage. The leaves are 3 or 4 inches long, about 1 inch broad, and of a light shining green. The wood is hard and heavy, but porous, and inferior to that of *Willow Oak*, which it resembles. In Illinois it has been used for shingles, probably for want of a better material. On the Pigeon River I have noticed a few trees with the leaves more or less cut or lobed, which are probably a cross between the *Shingle Oak* and one of the *Red Oaks*, though their whole appearance and habit were, in other respects, those of the former. This is Q. Leana, Nutt.

11. Upland Willow Oak. (Q. cinerea, Michx.) —Found only in the Pine barrens of the Lower District, where it is very generally diffused. It rarely exceeds 20 feet in height and 6 inches in diameter, though I have seen it, when standing alone and in favorable situations, quite a large tree with a circumference of 3 feet. As a general thing it may be considered too insignificant to merit more than a passing notice. Its foliage is of an ashy hue. The bark af-

fords a fine yellow dye; but the tree is too small and too little multiplied to furnish material for extensive use. In the vicinity of the Pee Dee River this Oak is called *Blue Jack*.

There is a dwarf variety of this, called *Running Oak* and *White Oak Runners* (var: pumila, Michx.), which is, I believe, the smallest Oak known. It rarely reaches a height of 3 feet, and bears a profusion of acorns at the height of 15 and 20 inches. The foliage is very similar to that of the preceding, but is smaller and becomes smoother in age. It abounds in creeping roots from which its small stocks spring. It is found only in the Lower District, especially near Wilmington, from whence it is sparingly found in the Barrens as far to the south as Florida.

12. WATER OAK. (Q. aquatica, Cates.)—This is not found beyond Maryland. It is abundant in our Lower District, and in some parts of the Middle, on the borders of swamps and in the river bottoms, and extends somewhat into the Upper. It is 40 or 50 feet high, and 12 to 20 inches in diameter. The leaves are pear-shaped, as in the *Black Jack*, being much the broadest at the upper end, but are smaller, smoother and paler green than in that species. The bark is seldom used for tanning. The wood, though very tough, is not much employed for economical purposes, being inferior to other kinds of Oak. On the Roanoke I have heard this called *Turkey Oak*, a name also given to the *Spanish* and *Post Oaks*.

The foliage of this tree varies very much in differ-

ent situations, it being sometimes narrow and very little, if at all, broader at the upper than at the lower end, so as to resemble very much that of the *Shingle Oak*. But any one who is familiar with the common form and habit of the *Water Oak* will not be easily deceived in its varieties.

13. Black Jack. (Q. nigra, Linn.)—This small and generally unsightly tree, easily recognized at a distance, when it is of much size, by its lower limbs hanging downwards, sometimes to the very ground, is found as far north as New Jersey and extends into the Western States, as well as southward to Florida. In this State we meet with it in various soils and situations from the coast to the mountains, seldom exceeding 30 feet in height and 12 inches in diameter. In the largest stocks the wood is heavy and compact, but coarse grained and porous in the smaller ones. When exposed to the weather it is subject to rapid decay, and is not of any value in the arts. For fuel it is among the best woods we have. The leaves are large (6 to 9 inches long), of a dark green above, and of a rusty color beneath. On young shoots, as is frequent on other trees, the leaves are often twice their ordinary size, and divided into several segments, as in the *Red Oaks*.

We now come to a Division of the Oaks known as that of the *Red Oaks*, in which there is such a confusion of popular names that they will be of little service in designating the species. There is no uniformity in their application in different parts of the

State, and within the same neighborhood the same name may be given to different species, or different names to the same species. This is not very surprising, since there is so much resemblance among them, and as there is apparently a tendency to crosses among the members of this Division. It is indeed sometimes rather difficult to determine whether a particular tree belongs to one or other of two or three pretty well marked species. I shall therefore be obliged to describe the following more minutely than I have the preceding, though I shall only notice the most common or typical forms. The names given below are those by which the species are most commonly known in different parts of the United States.

14. Spanish Oak. (Q. falcata, Michx.)—This is generally known in this State, I think, by the name of *Red Oak*, though sometimes called as above. It is also, in some parts, denominated *Turkey Oak*, from a vague resemblance between the form of the leaf (when it has but three divisions) and the track of a turkey. It is to be distinguished, even at some distance, from other species of this section by the grayish down on the underside of the leaves and on the young shoots upon which they grow, giving the tree a very different hue from that of the others. The leaves, too, have narrower divisions (3 to 7 in number) than the others, generally entire, and slightly curved backwards. The manner in which the clusters of leaves hang down from the ends of the

branches gives them a plume-like aspect very unlike those of the other species.

The Spanish Oak is found as far north as New Jersey, and southward to the Gulf of Mexico. In this State it is one of the most common forest trees from the coast to the mountains, but diminishes in quantity as we approach the latter. It is often over 80 feet in height, with a diameter of 4 to 5 feet. The bark of the trunk is dark-colored, its outer portion (cellular integument) being of moderate thickness. The wood is reddish and coarse-grained, with empty pores. The staves made of it are only adapted to contain coarse articles, but are said to be more esteemed in the West Indies than those made from the other *Red Oaks*. The wood is less durable than that of the *White Oaks*, and is not much used in building, etc. The bark is held in high estimation for tanning hides, which it renders whiter and more supple than other species.

A variety of this species (var: pagodæfolia, Ell.) has larger leaves, cut into 11 to 13 divisions, gradually diminishing in length from the lower to the upper divisions. Another variety (var: triloba, Michx.) has leaves with two or three short and rounded divisions at the outer end, but may always be recognized by the gray down on the underside and its accordance in other respects with the common form.

15. Black Oak. (Q. tinctoria, Bartr.) — A tree 80 to 90 feet high and 4 to 5 feet in diameter. The

trunk has a deeply furrowed, dark brown bark, from whence the tree probably gets its name. The leaves are cut rather deeply into 5 or 7 divisions, the divisions being also somewhat toothed, and each part tipped with a bristle. They have also a thin, rusty down on the underside. The leaf-stem is from 1 to 2 inches long. During the Spring and part of Summer their upper surface is roughened with small glands which are perceptible to the sight and touch. On young stocks they turn dull red in the Fall; those on old stocks, yellow. When the leaves have fallen, this species may be distinguished from the *Spanish Oak* by the longer, more acute and more scaly buds, and also by chewing a bit of the bark, which gives a yellow color to the saliva. The wood is reddish and coarse-grained, with empty pores, but is stronger and more durable than any other of the *Red Oaks;* and where *White Oak* cannot be obtained, is a good substitute for it in buildings. Staves are largely made of it for containing coarse articles. The bark is very rich in tannin, and is in much request. From this bark is obtained the *Quercitron*, which is extensively used in dyeing wool, calico, silk, and paper-hangings. The decoction is brownish yellow, and is made deeper by an alkali, lighter by acids, and brighter by a solution of tin.

This tree is common in the United States east and west of the Alleghanies, reaching north to New England, and is said to indicate a good soil for agriculture. It is most abundant in the upper part of

the State. If it exists in the Lower District, it must be sparingly.

16. Scarlet Oak. (Q. coccinea, Wang.) — This is generally confounded with the preceding species, and called *Spanish* and *Red Oak* in this State. It can be distinguished from the *Black Oak* by the leaves being more deeply cut, the divisions narrower and more widely separated, but especially by their being quite smooth on both sides and of a brighter shining green, turning bright scarlet after frost. The leaf-stem is also more slender and twice as long as in the *Black Oak*. The kernel of the acorn seems also to supply a uniform character of distinction,—that of the *Scarlet Oak* being *white*, and of the *Black Oak*, *yellowish*. The bark, when chewed, does not, like that of the *Black Oak*, impart a yellowish tinge to the saliva. The wood is very similar to that of the preceding species, but is not very durable, and is not used for building, etc., when better material can be had. What is known as *Red Oak staves* are made from this as well as from the two preceding species. The bark is much inferior for tanning to that of the *Black Oak*.

This tree ranges from New England to Georgia and Florida. In this State it abounds chiefly in the Middle and Upper Districts, it not being generally diffused in the Lower.

17. Red Oak. (Q. rubra, Linn.)—This, like the preceding species, is sometimes called *Spanish Oak*, though it is as strongly marked a tree as can be found

in our forests. The leaves are larger (6 to 9 inches long), than any others in this Division, not so deeply cut, smooth and green on both sides, changing in the Fall to dull red, then to yellow. The acorns in particular furnish a character which at once discriminates this from all the *Red Oaks*, they being of larger size (1 inch long), and having very *flat shallow cups*. The wood is reddish and coarse grained, and the pores very large. It is strong but not durable, and is much inferior to the other *Red Oaks*, though staves are sometimes made of it. The bark is inferior for tanning to that of the *Black* or *Scarlet Oak*.

This tree extends farther north than any other of our Oaks, reaching into Canada. It is tall and wide spreading, sometimes over 80 feet high, and 3 to 4 feet in diameter. For its full development it requires a cool and fertile situation, and hence abounds more in the interior parts of the State. In the Lower District it is found but sparingly.

18. Scrub Oak. (Q. Catesbæi, Michx.)—This grows only in the sandy *barrens* of the Lower District, but may be found from the coast westward to the counties of Richmond and Moore. I am not aware of its existence north of this State, but it is found southward to Florida. It seldom exceeds a height of 25 feet, and is most commonly from 10 to 15 feet high. Among the *Red Oaks* this species is easily recognized, not only by its situation and humble size, but by the very *short leaf-stem*. In this last particular, as well as in its habit, and in the color,

texture and weight of the wood, it has a close relation to the *Black Jack;* and in South Carolina is called *Forked-leaf Black Jack.* Indeed, when the leaves are fallen, the two are rather difficult to be distinguished. For fuel they hold about the same rank. The bark is said to be valuable for tanning, but is too scanty to be much used.

19. Bear Oak. (Q. ilicifolia, Wang.)—A shrub, ordinarily about 3 to 5 feet high, extending from New York southward through the mountains of Virginia (where it is common) and North Carolina (very rare), to Georgia. The leaves are 2 to 3 inches long, cut about half way to the middle nerve into two divisions on each side, and with a white down on the underside. Worthless in itself, but a good indicator of barren soil.

HICKORIES.—The general qualities of the wood of these species are so similar, that, to avoid repetition, they may as well be indicated here, so far as they belong to the whole genus or to any of its Divisions. For weight, strength, and tenacity of fibre, we have no wood superior; but its value is impaired by a tendency to rapid decay on exposure, and its peculiar liability to injury from worms. Hence it cannot be used in buildings. But the wood of the different species is indiscriminately used for axle trees, axe-handles, carpenters' tools, screws, cogs of mill wheels, the frames of chairs, whip handles, musket stocks, rake teeth, flails, etc., etc. For hoops we have noth-

ing equal to it. These are made from young stocks. For fuel, there is no wood which gives such intense heat and heavy long-lived coals. For this use, although discrimination is seldom made, the *Common Hickory* is said to be the best, and the *Bitter-nut Hickory* the poorest. For timber, *Shell-Bark* and *Pig-nut Hickories* are reputed the best.

It is to be observed upon this genus of trees, that the species are subject to considerable variation both in foliage and fruit,—sometimes apparently from crosses, as well as from difference of situation,—and hence are very difficult of discrimination without long and patient attention. This I have not given them, and am therefore unable to indicate anything like an accurate range of the species enumerated below, which have been carefully examined only in particular localities.

The Hickories are peculiar to North America, of which we have nine species. In this State I have seen but six, though I give seven in the following list. The species are very naturally arranged in three Divisions. The first Division is characterized by the husk falling away from the Nut in four entire pieces, and the bark of the old trunk peeling off in long flakes or plates. These are the *Shell-Barks* or *Shag-Barks*. The second has a husk which does not divide down to its base, and the bark of the trunk is not shaggy. These two, especially the first, have Nuts with a sweet eatable kernel. The third Division has Nuts with a thin shell and husk, and an astringent bitter kernel.

Division 1st.

Shell-bark Hickory, (Carya alba.)
Thick Shell-bark Hickory, (C. sulcata.)

Division 2d.

Common Hickory, (C. tomentosa.)
Pig-nut Hickory, (C. glabra.)
Small-nut Hickory, (C. microcarpa.)

Division 3d.

Bitter-nut Hickory, (C. amara.)
Water Bitter-nut Hickory, (C. aquatica.)

1. SHELL-BARK HICKORY. (Carya alba, Nutt.)—This is not abundant in any part of the State, and least of all in the Lower District. It grows upon the rich lands on and near watercourses. It is much more common in the Northern States than in the Southern. It is 60 to 80 feet high, with a disproportionate diameter of 15 to 20 inches for three fourths of its length. The narrow strips of outer bark loosened from the trunk, attached only by the middle, while the two ends are bowed outwards, which characterize this and the next species, are observable only on stocks that exceed 10 inches in diameter and are 8 to 10 years old. But the leaflets are almost uniformly in two pairs, (rarely three,) with an odd one at the end of the common leaf-stem. The nuts are nearly pointless, and with a thin white shell. They are the finest nuts we have, excepting perhaps the *Pecan Nut* (C. oliviæformis), of the Southwestern States.

2. THICK SHELL-BARK HICKORY. (C. sulcata,

Nutt.) — Most common in the Middle and Western States. I have not met with it in this State, and it is introduced here on the authority of others. It may be looked for only in the extreme western part of the State, especially along the rivers flowing westward.

This may be distinguished from the preceding species by its *three* pairs (sometimes four) of leaflets on the common leaf-stem, and by the *thick yellowish* shell of the nut, which is also ribbed on its upper half, and has a strong point. The kernel is smaller, and hardly so sweet as in the preceding.

3. Common Hickory. (C. tomentosa, Nutt.) — Found in all the States, and common in our own forests from the coast to the mountains, the only one which occurs in the barrens. All the Hickories are generally characteristic of a good soil, and this is no exception only when it grows in the barrens, as it is most vigorous in rich soils It is about 60 feet high and 18 to 20 inches in diameter. This species is white to the heart, for which reason, probably, it is called *White Hickory* in some parts of the State. The other species have their wood more or less reddish. The leaflets are from 7 to 9 (generally 7). The fruit has a thick husk, splitting nearly to the base. The nut is of various forms, but is somewhat six-angled, of a light brown color, with a very thick shell and small kernel.

4. Pig-Nut Hickory. (C. glabra, Torr.)—Found in most of the States. It is 70 to 80 feet high, scat-

teringly disseminated among the other Hickories throughout North Carolina. It can be distinguished in Winter by the shoots of the preceding Summer, which are brown, and not half the size of those of the preceding species. These are exceedingly tough and of the best quality for *Hickory withes*. The leaflets are smooth on both sides, 5 to 7 in number. The fruit is generally pear-shaped, the husk thin and green, the shell of the nut very hard and smooth, and the kernel small and sweetish.

5. Small-Nut Hickory. (C. microcarpa, Nutt.) —This is more common in the Northern States than with us. I have observed it only in Caldwell County, though it probably exists in most of the western counties, intermingled with the *Common Hickory*. It is of similar dimensions with the latter, but the bark of the trunk is much more even. The foliage is much like that of the *Pig-nut*. The nut is roundish, not much larger than a nutmeg, with a thin shell.

6. Bitter-Nut Hickory. (C. amara, Nutt.) — Not uncommon from the coast to the mountains, preferring rich and cool soils, where it rises to the height of 70 to 80 feet, with a diameter of two or more. It is sometimes called *Swamp Hickory*. The foliage appears later than that of the other species. The leaflets are 7 to 11 and smooth. It can be recognized in winter by its small, yellow buds. The fruit has a thin husk which has prominent seams opening about half-way to the base, and a nut with a thin shell that can be crushed with the fingers. The kernel is ex-

eessively bitter and astringent, not likely to be forgotten by any who have eaten it. The timber is inferior to that of the others.

7. Water Bitter-Nut Hickory. (C. aquatica, Nutt.)—This is 40 to 50 feet high, found only in the swamps and river bottoms from North Carolina southward. It is generally confounded with the preceding, from which it can be distinguished at some distance by the more numerous (9 to 13) and more slender leaflets, which are shaped very much like the leaves of the Peach, though larger. Fruit with a thin husk parted nearly to the base; a nut with thin shell and of a reddish color, and the kernels bitter as in the preceding. The timber is rather inferior, even to that of No. 6.

WALNUTS.—1. Black Walnut. (Juglans nigra, Linn.)—This tree is well known throughout the State by this name, and needs no particular description. With us it is 40 to 50 feet high; but in the richer lands of the Western States it is often 70 feet, with a diameter of 6 and 7. It is most abundant in our Middle District. The timber is much used in cabinet work, is of a dark brown color, strong and tenacious, the grain fine and compact enough for receiving a polish, and when well seasoned does not warp and split. It is also exempt from attacks of worms. The Nut is globular, and its kernel sweet and agreeable to most persons, though inferior to the European Walnut (J. regia.) The young fruit is

highly esteemed for pickles and eatsup. The husk is employed in domestic use for dyeing woollens. This is a pleasant shade-tree, and mingles well with others about a residence.

2. WHITE WALNUT. (J. cinerea, Linn.)—This is the common name of the tree in the section of State where it grows, though that of *Butternut*, applied to it in the Northern States, is not unknown. It is found upon bottom lands and river banks in the valleys of the Mountains. I have not met with it east of Wilkes, but am informed that it is occasionally found as far down the country as Orange and Randolph. Its general aspect is very much that of the *Black Walnut*, but it is a smaller tree, and when in fruit can be at once recognized by the Nuts, which are about twice as long as broad. When not in fruit, the pitchy clamminess of the leaf-stems and young branchlets, together with the smooth gray bark of the branches, will readily distinguish it In favorable localities at the North, this tree attains the height of 50 feet, with a diameter of 3 or more; but with us it is rather smaller The timber is of a reddish hue, not of much strength, but durable and free from attacks of worms. It is used in light cabinet work and in the panels of carriages, as it is light, not liable to split, and receives paint remarkably well. It is also used somewhat in the lower framework of buildings and for the various purposes in rural economy which require material not easily affected by heat and moisture. The bark is some-

times used for dyeing woollens a dark brown, though not equal for this purpose to that of *Black Walnut*. It is also a domestic remedy for cases where a sure but safe and gentle cathartic is needed. The kernel of the Nut is more oily than in the *Black Walnut*, but is palatable. The young fruit is used for Pickles. The sap of the tree is slightly saccharine, and sugar has been made from it, but not equal to that from the *Maple*.

CHESTNUTS.—1. CHESTNUT. (Castanea vesca, Linn.)—This is an inhabitant of all the cooler parts of the United States. With us it is chiefly confined to the mountains from Ashe to Cherokee, and is found but sparingly on hills in the Middle District as low down as Guilford and Randolph. It finds its proper soil and temperature on the sides of our high mountains, where it probably acquires as large dimensions as anywhere in the Union; stocks being sometimes met with which, at 6 feet from the ground, measure 15 to 16 feet in circumference. Its usual height is from 50 to 70 feet, but is sometimes 90, with a capacious and well formed top The wood is light, tolerably strong, elastic, and capable of resisting the effects of atmospheric changes. Its durability gives it great value for fencing, and the rails, which are split out straight and easily, are said to last 50 years. For shingles it is superior to the *Oaks*, but is liable to warp. It is sometimes used for cooperage, but is too porous for anything but dry

wares. For fuel it is little esteemed, as it *snaps* most intolerably, almost as much as *Hemlock Spruce*. But for charcoal it is well adapted, and in this form is extensively used in forges and smithies.

Botanists deem our Chestnut to be only a variety of the European. The wood is not quite so fine grained, and the nuts are only about half the size of the European, but they are much sweeter and more palatable. On Mt. Ætna is a Chestnut tree (but apparently of five united trunks), 53 feet in diameter, and with a spread of branches sufficient to shelter 100 men on horseback! There are several trunks near this which are 75 feet in circumference.

2. CHINQUAPIN. (C. pumila, Michx.)—This extends from the Delaware throughout the South. In this State it is known from the seaboard to Cherokee, and in great varieties of soil. It is usually a shrub from 6 to 12 feet high, but in cool fertile situations it is sometimes 30 or 40, and 12 or 18 inches in diameter. The wood is finer grained than the Chestnut and equally durable; but the stock is too small for extensive use.

There is a distinct variety of this (var: nana) in our poor forests with slender shoots and extensive runners, bearing fruit at the height of a foot.

BEECH. (Fagus ferruginea, Ait.)—Common throughout the United States, and the only species in the country. It is a very handsome tree, though rarely seen in cultivation. In the Lower District of

the State it occurs rather sparingly and of no great size. In the Middle District it is more common and luxuriant; but it is in the Mountains that it is found in greatest abundance and of proper dimensions, being there from 50 to 80 and even 100 feet high, with a diameter of 2 to 3 feet. The wood is compact and tough, and of very uniform texture, by which it is well adapted for plane-stocks, shoe-lasts, and the handles of mechanical implements. When perfectly seasoned it is not liable to warp. It is easily affected by variations of moisture and dryness, but is very durable when kept constantly dry, or when permanently immersed in water. The bark is sometimes used for tanning, but is not equal to that of *Oak*. The nuts are a fine mast for hogs, and a valuable oil can be expressed from them.

The old Saxon word for Beech is *Buch* or *Buck*, and hence our word *Buckwheat* (i. e. Beechwheat) from the similarity of their triangular fruit.

BUCKEYES.—These handsome productions, admired both for their foliage and blossoms, as well as for general elegance of form, are of the same genus with the Asiatic *Horse Chestnut* (Æ. Hippocastanum), so much prized as an ornamental tree in Europe and parts of this country. The leaves are what is called *digitate;* i. e. the leaflets spread, like the fingers of a hand, from the end of a common leaf-stem, a character which belongs to no other of our forest trees. There are four species in the United States,

of which two are native within our limits. Possibly a third species (Æ. parviflora) exists in the upper part of the State adjoining South Carolina and Georgia.

1. Yellow Buckeye. (Æsculus flava, Ait.)—More abundant in the Western than in the Atlantic States; in the latter it is not found north of Virginia. In this State it is most abundant upon the sides of our high mountains, and is nowhere of larger size. It here reaches a height of 60 to 80 feet, with a diameter of 3 to 4, and with its tapering straight trunk is a very imposing tree. There is no better indicator than this of a deep, rich, fertile soil. The flowers are in large clusters, yellow (or occasionally with a reddish tinge), and very showy. In the Middle District this species is found along streams and in river bottoms as far down as Orange, but is here a mere shrub 3 to 6 feet high.

2. Red Buckeye. (Æ. Pavia, Linn.)—This grows only in the Southern and Western States. It is distinguished by its dull red flowers, and is what is chiefly known in our Lower and Middle Districts under the name of *Buckeye*. It is usually 8 to 12 feet high, but sometimes becomes a small tree. The root of this species is sometimes used as a substitute for soap in washing woollen cloths. The powdered seeds and bruised branches, if thrown into small ponds and stirred a while, will so intoxicate fish that they rise to the surface and may be taken by hand.

POD-BEARING TREES.

The next GROUP of trees is that whose fruit is contained in Pods, or seed-vessels, which are longer than broad, like those of the Bean and Pea. It includes the *Locust*, *Red Bud*, etc.

1. LOCUST. (Robinia Pseudacacia, Linn.)—In the Atlantic States this well known ornamental tree first appears in southern Pennsylvania, and extends thence along the Alleghanies to their southern terminus. It is more common in the Western States. In North Carolina I have met with it in a wild state only on the lower ridges of the mountains, but probably it is, or was, native for some distance east of the Blue Ridge. The wood is hard, compact, and takes a high polish. It resists decay longer than almost any other, and hence is exceedingly valuable for posts and fences. There are differences, however, in the quality of the trees which it is important to keep in mind. Those with a *red heart* are deemed the best; those with a *greenish-yellow heart*, the next; and those with a *white heart*, the least valuable. In civil architecture the timber is not extensively used in buildings, but is employed for railroad ties and sleepers, whenever it can be had. In naval architecture it is used to as great an extent as the supply will permit. For trunnels (the wooden pins that fasten the planks to the frame of vessels) it is of the highest value, as, instead of decaying, it grows harder with age. The wood is also used by turners instead

of *Box*, for the manufacture of small articles, such as bowls, salad spoons, etc., for which it is well adapted by its hardness, durability, and capability of polish.

2. Clammy Locust. (R. viscosa, Vent.)—A very ornamental tree, smaller than the foregoing and much less known, it being chiefly confined to the southern range of our mountains and the adjoining ones in South Carolina and Georgia. It does not exceed 40 feet in height. The young branches are covered with a clammy matter, and the flowers are of a beautiful rose color,—characters which will always distinguish it from the preceding. The wood is similar.

3. Rose Locust. (R. hispida, Linn.) — A well-known ornamental shrub of our gardens, (sometimes known by the singular misnomer of *Rose of Sharon*,) with large, deep rose-colored blossoms, bristly branches, flower-stems, and pods. It is indigenous to the rocky summits of mountains and hills in the Upper and Middle Districts; and a dwarf variety, in the Pine barrens of the Lower.

Honey Locust. (Gleditschia triacanthos, Linn.) — Found in all the States from Pennsylvania and Illinois southward. It is diffused over this State, but is nowhere very abundant. It is from 30 to 50 feet high, and 2 or 3 feet through. The heart much resembles that of *Locust*, but is coarser, and the pores are quite open like those of *Red Oak*. It is therefore used only where other material cannot be conveniently had. The large pods, 12 or 18 inches long,

contain a sweet pulp from which a very palatable beer is made. This thorny tree has been occasionally employed for hedges, but, in all the cases I have seen, without success, the stocks having all run up into trees, possibly from not having been kept down by persevering attention to cutting in.

Red Bud. (Cercis Canadensis, Linn.)—Common over the United States, and found in the Lower and Middle Districts of this, most abundantly in the latter. It is from 15 to 25 feet high, but when the main stock is cut generally shoots up into a cluster of shrubs. As it blossoms early, before the development of its leaves, and is covered with a profusion of bright purplish-red flowers, it is a very striking object in the forests in early Spring.

Catalpa. (Catalpa bignonioides, Walt.)—This is so common around settlements as to merit a passing notice, though it is nowhere native in the Atlantic States north of the Savannah River. Further south, and at the West, it is not an uncommon forest tree near rivers, especially those that empty into the Mississippi.

Kentucky Coffee Tree. (Gymnocladus Canadensis, Lam.) — A native of the Western States, but occasionally cultivated about houses as a handsome shade-tree in our Middle District, and spontaneously multiplying from the seeds. It has a general aspect like that of *Locust*, for which it is often mistaken. The pods are thick-shelled, 6 to 10 inches long and 2 broad, containing seeds ½ inch broad.

FLAT-WINGED FRUIT TREES.

The next GROUP comprises trees with a flat-winged-fruit, as the Maple, Ash, and Elm.

MAPLES.—These are stately and beautiful trees, as much prized for ornament as for their value in art. We have five species of Maple, all that are known in the United States, two of which are mere shrubs.

1. RED MAPLE. (Acer rubrum, Linn.) — Well known throughout the State, being found in swamps and low grounds from the coast to the mountains. It is among the first trees to throw out its blossoms in early spring, (as early as February in the Lower District,) and with its bright scarlet flowers then gives a peculiarly pleasing aspect to the otherwise naked forest. In autumn, the brilliant crimson of its dying foliage again makes it a conspicuous object, though accompanied by others which vie with it in contributing to the splendor of our autumnal scenery. It does not appear to be so large here as farther north, where it is sometimes 70 feet high and 3 to 4 feet through. The wood is of close and fine grain, and susceptible of brilliant polish. It is extensively used in the manufacture of chairs, saddle-trees, yokes, and various articles of wooden ware. It is not sufficiently solid, however, for heavy work, and speedily decays if subjected to variations of heat and moisture. When the grain of this wood has a winding

direction, it furnishes the material called *Curly Maple*, which is much used for cabinet work and sometimes for the mouldings of houses. Bedsteads and gun-stocks of much beauty are made of it, and it is sometimes employed for inlaying mahogany. The varied effects of light and shade upon the tortuous veins can be much enhanced by rubbing with sulphuric acid, and afterwards with linseed oil. The bark of this tree is said to afford a dark blue dye, and a good black ink. The sap is somewhat saccharine, but is rarely used for making sugar. This tree in some situations has yellowish flowers and fruit, and is then called *Yellow Maple*.

2. White or Silver Maple. (A. dasycarpum, Ehrh.)—This is generally confounded with the foregoing, but is a much rarer tree, in this State. I do not remember to have seen it except in the Mountains. It is 30 to 50 feet high and 1 to 2 in diameter; though in the Western States sometimes 8 or 9 feet through. The top is more spreading than in the *Red Maple*. The leaves are bright green above, and of a silvery whiteness beneath, which gives a pleasing effect to their play in the sunlight, and helps to render the tree a desirable addition to ornamented grounds. The flowers are greenish-yellow, and the fruit (woolly when young) has large spreading wings. The wood is very white and fine grained, but much softer than in the other Maples; and hence is little used in cabinet work where the others can be had. The sap is sometimes converted into

sugar, which is of superior whiteness and flavor to that of the *Sugar Maple;* but twice the quantity of sap is required to give an equal quantity of sugar.

3. Sugar Maple. (A. saccharinum, Wang.)—This is found from Canada to Georgia, and is the most interesting and valuable of our Maples. It has a height of 50 to 80 feet, a diameter of 2 to 3, and a very symmetrical oval top of compact branches, which make it one of the most desirable trees for streets and avenues. It is very abundant in our mountains, and occurs also in the Middle and Lower Districts. The wood is white when freshly cut, but becomes of a faint rosy hue on exposure. It has a fine close grain, takes a fine polish, and is heavy and strong. It is not as durable as Oak, and is not much used in Civil or Naval Architecture. When well seasoned, it serves for axles and spokes of wheels, chairs, &c. This tree produces a curled variety of wood like the *Red Maple.* But there is yet another and more beautiful variety, called *Bird's Eye*, which is much used for ornamental wood work. The wood makes excellent fuel. The ashes abound in alkali, and they furnish the largest part of the potash shipped from Northern ports.

It is the production of sugar from the sap of this tree, which gives it its highest value. In some of the Northern States, particularly in Vermont, it is made to an extent that constitutes them almost as much a sugar producing country as Louisiana. In our Mountains, which are too remote from a market

to permit any effort to produce this article in sufficient quantity, and of suitable quality, for purposes of commerce, it is annually made to some extent for home use, but not enough for the "sweetening" required even in the Mountains. It is only in the colder regions that the tree can be used for this purpose. In our low country sugar cannot be made from it.

4. Striped Maple. (A. Pennsylvanicum, Linn.)—This grows in the colder parts of the country from Canada to Georgia, and is known under the names, besides the one already given, of *Moosewood* and *Striped Dogwood*. In North Carolina it is confined to the Mountains. It is but a shrub, rarely over 10 feet high. The bark is smooth and green, with longitudinal dark stripes, which distinguishes it at all seasons, and makes it an object of some curiosity and interest in shrubberies. The fruit is like that of other Maples, and of greenish color.

5. Mountain Maple. (A. spicatum, Lam.)—This has nearly the same range in the country with the preceding one. In this State it is found only in the Mountains, and is also a shrub 6 to 10 feet high. From its insignificance it does not seem to have attracted sufficient attention to acquire a popular name; but is known farther north by the above, and also as *Low Maple*. Europeans, who have paid far more attention than ourselves to the uses and capacities of our forest productions, have ascertained that this and the *Striped Maple* acquire double their

natural size when engrafted on other speeies of Maple. Its leaves and fruit have the common eharaeters of a Maple, the latter being rather small.

Ash-leaved Maple. (Negundo aceroides, Mœneh.) — I have not learned the name by whieh this is known in North Carolina, and have adopted the one very appropriately used in other parts of the United States. In the Western States, where it is more common, it is ealled *Box Elder*. In South Carolina I have heard it called *Stinking Ash*. It has the leaves of an *Ash*, and the fruit of a *Maple*. It is rare in the Lower Distriet, but is eommon on the borders of streams in the Middle District to the Mountains.

Its ordinary height is from 15 to 25 feet, a rather handsome tree, of light green branehes and trunk, and the bark of rather disagreeable odor. The wood, though fine-grained, is not mueh used, as it is liable to rapid deeay. In the West it is sometimes employed for inlaying furniture made of mahogany and cherry.

ASHES.—This is a genus of handsome trees, and next to the Oaks, furnishes the most valuable timber of our forests. The distinguishing properties of the wood are strength and elasticity. The speeies have a great similarity of general aspect, and are subject to eonsiderable variation in different soils, so that their diserimination requires some attention and experienee. In this State they are all ealled simply *Ash*, without any diseriminating adjunets, and I have

not the advantage of names, therefore, to assist me in pointing out the species. None of them are very abundant.

1. WATER ASH. (Fraxinus platycarpa, Michx.) —This is a Southern species, peculiar to the marshy borders of creeks and rivers in the Lower Districts, and where, so far as I have learned, there is no other species. It is the only one in the State in which the wings of the fruit extend down to the bottom of the seed, and is sometimes even three-winged. The locality and the fruit will therefore readily determine this species. The tree is 30 to 40 feet high, its timber probably less valuable than some of the others, though partaking of the same general qualities.

2. GREEN ASH. (F. viridis, Michx.) — I have seen this only in the Middle and Upper Districts, upon the banks of rivers. The fruit is gradually dilated from the base upward. The leaflets (5 to 9) are more or less toothed, smooth and green on both sides. This is a middle-sized tree, with greenish branchlets. The timber is much like that of the others, but hardly equal to *White Ash*.

3. RED ASH. (F. pubescens, Lam.)—I have seen this only in Lincoln, but it is doubtless an inhabitant of rich swampy grounds in other counties of the Middle District. It is 50 to 60 feet high, the underside of the leaves, and also the young shoots, clothed with a thick whitish down, which changes, in the Fall, to a reddish tint, from whence is probably derived its common name. The leaflets (7 to 9) are but

slightly notched. The fruit is very much like that of the *Green Ash*. The wood is redder than in the *White Ash*, is harder and less elastic, but used for the same purposes.

4. White Ash. (F. Americana, Linn.)—Diffused through the United States. With us it is not very abundant, but occurs along streams and the borders of low grounds in the Middle and Upper Districts. It is 50 to 70 or 80 feet high, and 2 to 3 feet through. It has a straight trunk, with grayish furrowed bark, and smooth bluish-gray branchlets and shoots. The leaflets, in Summer, are very smooth, of a light green above and whitish beneath, very slightly toothed on the edges. The fruit is about 1½ inch long, narrow, and with a long slender base, the wing springing from near the summit of the seed. The heart-wood is reddish, and is considered superior to the other Ashes in strength and elasticity. For all the purposes which require these properties, it is employed by carriage-makers, wheelwrights, shipwrights, turners, and coopers. There are but few trees of the American forests more valuable and more extensively used than this. It is withal a very showy tree in private grounds.

ELMS.—A genus of trees too well known to need a particular specification of their characters. The fruit is small, flat, and with a thin winged margin.

1. Elm. (Ulmus Americana, Linn.) — This magnificent shade tree is well known throughout the

country. In the most favorable situations with us, it is not often seen above 60 or 70 feet high; but in some sections, as in the Middle States, it reaches the height of 100 feet, and a diameter of 4 or 5 feet. The timber of this tree is not in much demand, but is occasionally used by wheelwrights for the naves of wheels, where other material cannot be obtained.

There is a difference in the spread of this tree, the form with drooping branches being much more graceful and showy than the one with more erect branches. It is much to be regretted that this is generally so crowded in our streets as to prevent its attaining its widest spread, and its most natural and attractive form.

2. Small-Leaved Elm. (U. alata, Michx.)—Generally known in this State by this name, but more commonly known elsewhere, perhaps, as *Wahoo*. It is not uncommon with us, except on the higher mountains. Its Northern limit is in lower Virginia. It is only 30 to 45 feet high, not only smaller, but of much less graceful form than the preceding, though often seen as a shade tree in our streets. It is readily distinguished by its much smaller leaves, and by the corky excrescences which, as in the *Sweet Gum*, wing the smaller branches.

The wood is more compact and finer grained than in the former species, and is used for the naves of wheels, for which some prefer it to *Black Gum*.

A variety of this occurs, in which the excrescences are wanting, and the branches more slender and

flowing. The small leaves, however, determine the species.

3. Slippery Elm. (U. fulva, Michx.)—Widely diffused over North America, but in no localities so abundant as either of the preceding. It is occasionally met with in our Lower District, but more frequently in the Middle, and to some extent in the Upper. It is from 30 to 50 feet high, and 12 to 18 inches through. The wood is coarser than that of the other species, but is stronger and more durable, when exposed to the weather, than the common Elm, and is sometimes used in the Western States in buildings and vessels. For ship blocks it is said to be of the highest value. As the trunk splits well, it is convenient for the making of rails, which are very durable. The inner bark of this tree, especially of the branches, contains a large amount of mucilage which is serviceable in colds and bronchial affections, and for emollient plasters.

TREES BEARING FLESHY FRUIT.

The next Group comprises those trees which have a fruit more or less *fleshy*, whether *stone fruit* like Plums and Cherries, or those which contain seeds like the Crab Apple, and those smaller forms which would popularly be called *Berries*.

1. Red Plum. (Prunus Americana, Marsh.)—A small tree or shrub not uncommon from Canada to

Louisiana; and in this State from the coast to Cherokee, especially in the Upper District, along streams and on the border of woods. The leaves are quite veiny and coarsely toothed. The fruit is red, orange or yellow, with a rather tough skin, generally acerb and uneatable, but occasionally of good flavor and then makes an excellent preserve. Some very good varieties have been produced by cultivation.

2. Chickasaw Plum. (P. Chicasa, Michx.)—A shrub very common in old fields and about settlements throughout the State, sometimes becoming a small tree. It has every appearance of being an introduced plant, and it was a tradition of the Indians that they brought this fruit from beyond the Mississippi, where it is now known to be indigenous. The leaves are smooth, not very veiny, and finely toothed. The fruit varies very much both in color and flavor, but generally quite pleasant, and is much improved by cultivation.

3. Sloe. (P. spinosa, Linn.?)—I have seen this only in Lincoln County, where it was pointed out to me by Dr. Hunter, and called by the above name. As I have no notes upon this small tree, I am now in uncertainty whether it be identical with the English *Sloe* or *Blackthorn*, which is naturalized in some parts of the country, and is considered by the best Botanists to be the parent of the common cultivated Plum (P. domestica, Linn.).

4. Wild Cherry. (P. serotina, Ehrh.)—This ranks among the largest and finest trees of the

American forest, and is very widely diffused through the United States. In this State it is found through all the Districts, but is less common in the Lower, where the soil and climate are not so favorable to its growth. It is on the rich and cool declivities of our mountains that it acquires its full dimensions and attains a height of 60 to 80 feet, and a diameter of 2 to 3 feet. The smooth straight shaft, symmetrical summit, bright green leaves and profuse spikes of white flowers, give it a character of much beauty. The fruit is nearly black (from which the tree is often called *Black Cherry*), slightly bitter, but with a pleasant vinous flavor, and was formerly much used as a cordial in spiritous infusion. The wood is of a light red tint which deepens with age, is compact and fine grained, and not liable to warp when properly seasoned. If selected from the part of the trunk near the branches, it is almost equal to Mahogany in appearance. It was once extensively used in nearly all kinds of cabinet work, but has been pretty much superseded by Mahogany and Rosewood. The bark of this tree is a valuable tonic, and forms the basis of some quack medicines.

5. Wild Red Cherry. (P. Pennsylvanica, Linn.) —Chiefly found at the North, but within our limits grows sparingly upon Black, Grandfather, and a few others of our highest mountains. I have but once heard it designated by any distinctive name, viz., *Macnoly*, which may possibly be a corruption of *Magnolia*, and so a misapplication. It is 20 to 30

feet high. The flowers grow in clusters from lateral buds, and not in racemes from the end of the branchlets, as in the preceding. The fruit is small and red, with a thin, sour flesh. The bark of the trunk is a light red. The wood is reddish and fine-grained, but the tree is too small to admit of much use.

6. Mock Orange. (P. Caroliniana, Ait.) — This much admired species is confined to the neighborhood of the Ocean, and is not native, I think, much, if any, north of the Cape Fear. From thence southward it is rather common along the Atlantic and Gulf coasts. It is 20 to 30 feet high, in proper soil farther south becoming 40 to 50, with thick oval summit, clothed with *evergreen* leaves and casting a deep shade. The racemes of white flowers (growing from the fork of the leaves) are numerous and showy. The fruit is black, globular, not eatable, and remains all Winter on the tree. The wood is rose-colored and fine-grained, rather brittle, I think, but is not abundant enough to be of use in the arts, and is not superior to others more easily obtained. The chief value of the tree is as an ornament, for which it is very extensively cultivated about houses, either singly or as borders and hedges to private grounds throughout the Lower Districts of the Southern States, thriving very well in sandy soils.

Devil Wood. (Olea Americana, Linn.) — This has about the same range with the *Live Oak*, and, like that, is found but a short distance from the coast.

I am not informed of any popular name by which it is designated in this State, and have above given the one appropriated to it farther south. As it is an Olive, it might properly be called *American Olive*. It is commonly about 10 to 15 feet high, but is sometimes 30 and more. The leaves are evergreen, entire, thick and very smooth, and give the tree a very pleasing aspect. The fruit is rather larger than a buckshot, of a bluish-purple color, presenting a pleasant contrast to the foliage. The flesh is rather thin over a hard stone, and not eatable. The bark is of a whitish green. The wood has a fine grain, and when dry is exceedingly hard, and very difficult to cut or split, which may furnish a clue, perhaps, to the origin of its name. This tree is well worthy of culture. I have seen it in private grounds under the name of *Dahoon Holly;* but the latter is a very different thing, being a true *Holly* or Ilex.

The remainder of this Group, with the exception of the Crab Apple and Persimmon, have fruit which would popularly be called *Berries*, and I therefore bring them together, though the first *eight* succeeding genera would not be so called by Botanists.

1. Holly. (Ilex opaca, Ait.)—Common south of New York, and well known through the whole of our State. It is 30 to 40 feet high, and 12 to 15 inches in diameter. The wood is heavy, with a fine, compact grain, and takes a brilliant polish. When dry it is very hard, and serves well for pulleys, screws,

etc. The black lines inlaid in mahogany furniture are often the dyed wood of this tree, intended to simulate ebony. The berries are purgative, and 15 or 20 of them will produce vomiting. The fine form of this tree, with its evergreen leaves and scarlet berries, gives it much beauty, especially in Winter; but it is said to be less attractive than the *European Holly*. For avenues and hedgerows we have few trees superior to it.

2. Dahoon Holly. (I. Dahoon, Walt.)—A shrub or small tree from 6 to 25 feet high, growing on the borders of the Pine-barren ponds and swamps of our Low Country, from Virginia to Florida. The leaves are 1 to 2 inches long, ¼ to ½ inch wide, entire, or with a few sharp teeth near the upper end, evergreen. The berries are red, as in the Holly and Yopon, and the plant is well worthy of cultivation.

3. Yopon. (I. Cassine, Linn.)—An elegant shrub, 10 to 15 feet high, but sometimes rising into a small tree of 20 to 25 feet. Its native place is near salt water, and it is found from Virginia southward, but never far in the interior. Its dark evergreen leaves and bright red berries make it very ornamental in yards and shrubberies. The leaves are small, ½ to 1 inch long, very smooth, and evenly scalloped on the edges with small rounded teeth. In some sections of the Lower District, especially in the region of the Dismal Swamp, these are annually dried and used for tea, which is, however, oppressively sudorific,—at least to one not accustomed to it. The Mate, or

Paraguay Tea, of South America, is of the same genus as this, (the I. Paraguayensis,) but a very different species. Our *Yopon* is the article from which the famous *Black Drink* of the Southern Indians was made. "At a certain time of the year they come down in droves from a distance of some hundred miles to the coast for the leaves of this tree. They make a fire on the ground, and putting a great kettle of water on it, they throw in a large quantity of these leaves, and setting themselves around the fire, from a bowl that holds about a pint they begin drinking large draughts, which in a short time occasions them to vomit freely and easily. Thus they continue drinking and vomiting for the space of two or three days, until they have sufficiently cleansed themselves; and then every one taking a bundle of the tree, they all retire to their habitations."

4. (I. decidua, Walt.)—This and the next three have deciduous leaves, and have not been honored in this State, as far as I know, with popular names. This is common along shaded ravines and branches throughout the Middle District, and is from 6 to 15 feet high. The leaves are 1 to 2 inches long, with rounded teeth on the edges, narrow and tapering down into a short stem, somewhat hairy on the veins of the underside, otherwise smooth. Berries red, in clusters, each containing 4 to 6 bony seeds, that are ribbed on the back.

5. (I. ambigua, Chapm.)—A shrub or small tree confined to our mountain region in this State, though

found elsewhere to the North and South, and from 8 to 20 feet high. The leaves are 3 to 5 and sometimes 6 inches long, about half as broad, with fine sharp teeth on the edges, smooth on both sides, and tapering at the upper end. The berries are red, not in clusters, and with seeds as in No. 4.

6. (I. verticillata, Gray.)—This occurs in all the Districts, and in various soils, 2 to 10 feet high, and has clusters of bright scarlet berries which hang on through the Winter. In some States it is called *Winterberry*. The leaves are about 2 inches long, of varying width, but generally broader toward the upper end, coarsely toothed, paler and somewhat downy on the underside. The seeds are smooth and even. A decoction of the bark is a popular application to old sores.

7. Gallberry. (I. glabra, Gray.)—This and the next species are evergreen shrubs, indiscriminately called by the above name, sometimes *Galls*, more rarely *Inkberries*, names apparently derived from their black bitter berries. This is from 3 to 5 feet high, very common in the Branch swamps of the Lower District, and giving its name of Galls or Gallbays to the low places chiefly occupied by it. The leaves are very smooth and green, sparingly toothed, 1 to 1½ inch long, and about half that width.

8. Tall Gallberry. (I. coriacea, Chapm.)—This grows in similar situations with the preceding, having the same habit and appearance, but full twice as large, the leaves also much larger, and either entire or with scattered sharp teeth.

1. Dogwood. (Cornus florida, Linn.)—Common throughout the United States, and mostly known by this name, but sometimes called *Boxwood.* From the showiness of its flowers, and the value of its wood and bark, it possesses considerable interest. Its usual height is from 12 to 20 feet, but is sometimes 30 and 35. The wood is heavy, hard and fine grained, and takes a fine polish. Pieces cannot be had of sufficient size for large work; but for the smaller sorts of mechanical and agricultural implements, such as cogs of mill wheels, harrow teeth, mallets, wedges, hames, etc., the well seasoned wood is well adapted and much used. The young shoots are used for light hoops. The inner bark is an excellent substitute for Peruvian Bark in intermittent fevers. The fresh article is apt to produce pain, which can be prevented, however, by mixing it with Virginia Snake Root. After being dried for a year, this precaution is unnecessary. A very good Ink can be made of this bark in place of Galls. A pretty variety of this tree with reddish flowers is occasionally met with.

2. Swamp Dogwood. (C. sericea, Linn.)—This and the remaining species of the genus are only shrubs, but are placed here for the purpose of having all the species of a genus together, as I have done in other genera. With the exception of the last species, they all have their *leaves opposite*, as in the *Dogwood.* This is the only one of them which has received notice enough in this State, so far as I have discov-

ered, to get a name. It is found in low woods in the Middle and Upper Districts, has purplish branches, is from 6 to 10 feet high, and having rather broad, pointed leaves, which are smooth above and with a silky down beneath. The flowers are white, in flat-topped clusters, succeeded by pale-blue berries.

3. (C. stricta, Linn.)—This is 6 to 15 feet high, with brownish or reddish branches, found only in the wet lands of the Lower District. The leaves are about 3 inches long and 1 inch wide, tapering to a point at the upper end, the edges slightly uneven, smooth on both sides, paler and with prominent veins on the underside. The flowers and pale-blue berries are much as in No. 2.

4. (C. paniculata, L'Her.)—A branching shrub, 4 to 8 feet high, with gray branches, found in this State only in our mountain counties. The leaves are only 2 to 3 inches long, with a tapering point, smooth, whitish on the underside. The white flowers are in longer and looser clusters than in the two preceding, and the berries white.

5. (C. alternifolia, L'Her.)—I have met with this only on the higher mountains. It is the only one of this genus of *Cornels*—this being the common name of the shrubby Dogwoods—which has the leaves alternating on the branches, instead of being opposite to each other in pairs. It is 10 to 15 and 20 feet high, the branches also alternate, greenish, streaked with white. The leaves are about 3 inches long, hoary and slightly hairy beneath, and pointed at the

end. The flowers are whitish, in a loose flat topped cluster; the berries dark blue or bluish black.

HACKBERRY. (Celtis occidentalis, Linn.)—Common over the United States, sometimes called *Nettle Tree*, and scatteringly found in all parts of North Carolina. It is occasionally seen as a shade tree in our streets, and is admired by some for its dark green foliage, deep shade and rather graceful branches. The bark of the trunk and larger branches is roughened by small, ridged excrescences. The leaves are about 2 inches long, and rather peculiar in having one side perceptibly smaller than the other. The berries are about $\frac{1}{4}$ or $\frac{1}{3}$ of an inch in diameter, of a mahogany color, with a sweetish but thin flesh, enclosing a globular nut. This tree is from 50 to 70 feet high, and 18 to 20 inches in diameter. The wood does not appear to be used for any important purpose.

There is a shrubby form of this (var: pumila) occasionally met with in the Lower and Middle Districts, 3 to 10 feet high, and with smaller, thinner leaves, but easily recognized by those who are familiar with the larger form.

1. BLACK GUM. (Nyssa aquatica, Linn.)—Common in swamps and shallow ponds of the Lower and Middle Districts, often called *Sour Gum* or *Gum Tree*. It is from 30 to 45 feet high, 12 to 18 inches in diameter. The leaves are 1 to 2 inches long, of a dark green and shining above, and somewhat downy underneath when young. The fruit is commonly in

pairs, of a dark blue color, borne on a common stem from ½ to 1 inch long. The wood of this tree has its fibres so interwoven in various directions as to make it nearly impossible to be split, and it is therefore used (especially the yellow variety, known as the *Yellow Gum*) for the hubs of wheels. It is also employed for making hatters' blocks, the cogged cylinders in mills for beating rice, and for caps to masts. The roots are in domestic use for large corks, for which, on account of their compressibility and lightness, they answer very well. The crimson hue of the foliage, after frost, of this and the next species, contributes much, with that of the *Red Maple*, *Sassafras*, etc., to give that peculiar brilliancy to our autumnal scenery so often noticed by foreigners.

2. (N. multiflora, Wang.)—With us this tree seems to be entirely confounded with the preceding, and is also called *Black* or *Sour Gum*. In some of the States it is also called *Tupelo* or *Pepperidge*. This tree, however, grows mostly in the uplands in rich, generally moist, soils, and is larger every way. It is from 30 to 60 feet high, and 1 to 2 feet in diameter. The leaves are 2 to 6 inches long, with a white down underneath, especially when young, rather thick, and shining. The berry is about ½ inch long. The wood is like that of No. 1.

3. Cotton Gum. (N. uniflora, Walt.)—This is a Southern tree, having its Northern limit in Southeastern Virginia, and confined to the deep swamps of

the Lower Districts. It is 60 to 80 feet high. The leaves are 5 to 8 inches long, with a few large teeth on the edges, and a soft whitish down underneath. The fruit is an inch or more long, and of a deep blue color. The wood is like that of the two preceding, but is softer, and is indeed the softest wood we have. As it does not split and is very easily worked, it is manufactured into light bowls and trays. The roots are used for making floats to buoy seines, and are a very fair substitute for cork where elasticity is not important.

SASSAFRAS. (Sassafras officinale, Nees.)—No plant in the United States is perhaps more extensively diffused than this. In favorable soils it is 40 to 50 feet high, while in poor ground and in the borders of old fields it flowers at the height of 4 to 6 feet. It is common in the Lower and Middle Districts, but is rare in the more elevated parts of the Upper. It is found of largest dimensions in the Middle District. What is known as the *White Sassafras* prevails in the Lower District, the *Red Sassafras* in the others, their differences depending apparently upon a difference of soil. The wood is said to be durable, and is used for fence posts as well as for the rafters and joists of buildings. It is said also to be free from attacks of worms, and that bedsteads made of it are never infested by insects. The roots, and also the flowers, are the basis of some diet drinks which are thought by some to be serviceable to the human system in Spring and Summer.

The reputed virtues of the root caused it to become one of the first of our native products introduced into Europe, and ship loads were carried thither in the earlier settlement of this country. The bark of the root is a powerful aromatic stimulant, and has been used in medicine more than 200 years. The young buds and ends of branches contain a good deal of mucilage, and are sometimes used as a substitute for Okra in soups,—where the latter cannot be had.

Red Bay. (Persea Carolinensis, Nees.)—This extends from Virginia through the Lower Districts of the Southern States to Louisiana, appearing to be confined to the branch swamps within the range of the Long-leaved Pine. It is a small tree or shrub here, but in the vicinity of the Gulf it reaches a height 50 and 70 feet. The evergreen leaves are 2 to 4 inches long, 1 or more wide, smooth and green above, pale beneath. The shrubby form has the leaves larger and the underside clothed with a gray down. They have a strong aromatic odor very like that of the European Laurel and may be used in the same manner in cookery and medicine. An aromatic distillation like the Bay Rum of the West Indies could doubtless be obtained from them. The wood is of a beautiful rose color, strong and durable, with a very fine compact grain, and is susceptible of a brilliant polish. Before Mahogany came into such extensive use, articles of furniture of great beauty were made from it at the South, the best having the appearance of watered satin, and they are still found

in the houses of some of the older families of the country. I have heard of a single log in Florida sawed into veneering and sold for $400. In this State it is seldom found of sufficient size for any very important uses.

PALMETTO. (Sabal Palmetto, R. & S.)—Cape Hatteras is, or was, the northern limit of this Palm, from whence southward it becomes more abundant in the vicinity of the Ocean. This is the only representative in the United States of a large and remarkable class of trees mostly confined to the Torrid Zone. A trunk 40 or 50 feet in height, of uniform diameter, with a tufted summit of large brilliant green, fan-shaped leaves, and so wholly different in structure and aspect from all our other forest trees, is a very noticeable and attractive object on our coast.

The trunk of this tree is of great value in the construction of wharves, as they are not subject to injury from sea-worms. They have been found serviceable in structures for defence, since balls pass with difficulty through the wood as through cork, and the wood closes upon the perforation instead of splitting. The rarity of the tree in this State renders it of little economical importance here. It is to be deeply regretted, however, that a reckless indifference to the future, which has been charged as a characteristic of Americans, is likely to efface, at no very distant time, every vestige of this interesting ornament of our coast. The inner portion of the young plant is very tender and palatable, somewhat resem-

bling the Artichoke and Cabbage in taste (hence its name of *Cabbage Tree*), and is often taken for pickling, and the stock is ruined by the process. Thus for a pound or two of pickles, no better either than many other kinds, the growth of half a century is destroyed in a moment, and posterity left to the wretched inheritance of vain mourning for the loss of the greatest beauty of our maritime forest.

2. Dwarf Palmetto. (S. Adansonii, Guerns.)—This is but 3 or 4 feet high, never forming a trunk like the preceding, and found only in the Lower District. The leaves of both these species are employed in the manufacture of palm-leaf hats.

Pride of India, or China Tree. (Melia Azedarach, Linn.)—Is a common shade tree of streets and yards in the Lower District, and occasionally is seen in the lower part of the Middle District. It is quite naturalized in the former region, to which it is well adapted by its free growth in sandy soil. It is from 25 to 40 feet high, with a spreading top, and its dark green compound leaves and large loose clusters of fragrant lilac-colored flowers make it quite ornamental. The timber is of a reddish hue, and said to be strong and durable; but is seldom used. The leaves pounded and mixed with lard constitute a Persian remedy for a cutaneous disease, better treated, perhaps, with sulphur. The berries are reputed poisonous, as well as most other portions of the tree. Robins feeding upon them in the Spring are so stupefied as to be easily caught.

Buckthorn. (Bumelia lycioides, Gært.)—A small tree from 15 to 25 feet high, found from North Carolina to Louisiana, rather sparingly in this State from the coast to Lincoln County. Its leaves are entire, smooth on both sides, about 2 inches long and ¾ of an inch wide, with short stems. The flowers are whitish and small, growing in a thick cluster in the fork of the leaves, succeeded by a black, cherry-like fruit, about the size of a pea. The wood is exceedingly hard and heavy, with an irregular grain, and would doubtless be useful for mechanical purposes, were it not too rare to attract much attention.

Yellow Wood. (Symplocos tinctoria, L'Her.)—Also called *Sweet Leaf* and *High Bush Laurel*. It does not extend much, if any, north of James River. In this State it occurs from the coast to the mountains, but is most multiplied in the Lower District. In poor soils it is only a shrub 2 to 6 feet high; but in those which are fertile, as on the borders of swamps, it becomes a small tree, 20 to 25 feet high and 6 to 8 inches in diameter. If the trunk be wounded in Spring, it exudes a milky, offensive juice. The leaves, which are 3 to 5 inches long, are sweet to the taste but rather dry, and greedily eaten by cattle and deer in Winter. They afford, by decoction, a beautiful yellow color, which is fixed by a little alum, wherewith cotton, woollen and silk, are dyed. It is not much used, however. The fruit is a small one-seeded berry. The wood is soft and valueless.

MAGNOLIAS.—Of this universally and deservedly admired genus there are seven species in the United States, all of which are found within our borders. They all have an aromatic and somewhat bitter bark. The fruit is a fleshy cone, from the cells of which the scarlet berries are expelled and hang for some days by elastic cords. The berries of most become quickly corrupted, but may be preserved for use in damp moss.

1. MAGNOLIA. (Magnolia grandiflora, Linn.)—I retain the common designation of this tree, though we have six others equally entitled to the name. Farther south it is often called *Big Laurel*. The northern limit of this tree is in Brunswick County, south of the Cape Fear; but it flourishes vigorously in cultivation through all the lower part of the State. Its usual height in the forests is from 50 to 70 feet, but has been found 90 feet high, and has a handsome form. The leaves are 6 to 10 inches long, evergreen, very thick and leathery. The white fragrant flowers, 6 to 8 inches broad, contrasting strongly with the dark green foliage, make this perhaps the most beautiful tree in the United States. The timber of this tree is soft and very white, but is little used.

2. SWEET BAY. (M. glauca, Linn.)—The smallest and most widely diffused of our Magnolias, it being common in the maritime districts from Louisiana to New Jersey, and in a single locality north of Boston. In this State it is seen along branches and bays throughout the Lower District, and in similar

situations, though not common in the Middle District. It is from 12 to 25 and 30 feet high, sometimes flowering at the height of 5 to 6 feet. The leaves are small, the white under-surface contrasting pleasantly with the pale green of the upper. The flowers are 2 to 3 inches broad, pure white, and of powerful but grateful odor.

3. Umbrella Tree. (M. Umbrella, Lam.)—This is common in the Middle and Western States as well as in the Southern. In this State it is met with in shaded deep rich soils from the coast to Cherokee, and is mostly called *Cucumber Tree*, a name more generally and properly given to the next species. It is from 25 to 35 feet high. The leaves are 18 to 20 inches long, 6 to 7 broad, and acute at each end. The flowers are 7 to 8 inches broad, white, and not of pleasant odor. Though inferior in beauty to some others, it is an ornamental tree and deserving of cultivation.

4. Cucumber Tree. (M. acuminata, Linn.)—This seems to be universally known by the name here given, and is so designated from the form of its cone or fruit, which, in this species, is narrower than in the others, and when green is not unlike a cucumber about 3 inches long. The tree is found from the Northern Lakes to the mountains of Georgia. In this State it grows only on the mountains, particularly of Ashe, Yancey and Burke, in moist fertile soil of declivities and on the banks of torrents. It is from 60 to 80 feet high, and 4 to 5 in diameter, com-

paring well in dimensions with No. 1. The leaves are 6 to 8 inches long, 3 to 4 broad, and rounded at base. The flowers are 4 to 5 inches broad, white, with a bluish or yellowish tinge, and very slightly odorous. The wood is somewhat similar to that of the *Tulip Tree*, is fine grained and takes a good polish, but is not so strong and durable. As an ornamental tree it is much admired.

5. Large-Leaved Umbrella Tree. (M. macrophylla, Michx.)—This and No. 3 derive their names of *Umbrella Tree* from the mode in which their leaves spread from the ends of the branches. It is a rare product east of the Alleghanies, having been found only on the Chattahoochie in Georgia, in Middle Florida, and in Lincoln County of this State. West of the mountains it is more common, though in scattering groups and at wide intervals. In Lincoln it occurs in several places not far from the road between Lincolnton and Tuckaseegee Ford; as near Smith's, the Moore Mine, and Huntersville, six, ten, and eighteen miles from the former place. It chooses cool, rather moist and fertile situations, is from 15 to 30 feet high, and without any beauty of form. But its leaves and flowers surpass in size those of any tree or shrub in this country. The former are from 20 to 30 inches long, occasionally even longer, clustered at the ends of the branches and spreading from them like an umbrella, their two sides rounded at the base and diverging like ears from the leaf-stem. The flowers are 12 to 14 inches broad, white, with a

broad purple spot on the inner base of the petals, and fragrant. It bears cultivation very well in our Middle District. In the Lower District it is not so manageable, but can there be grafted on the native Umbrella Tree, as was successfully done by the elder Michaux in his garden near Charleston.

6. Long-Leaved Cucumber Tree. (M. Fraseri, Walt.)—Found only in ravines of the mountains, where it is known by this name, and also as *Wahoo* and *Indian Physic*. It is confined chiefly to the mountains of the Southern States, and is nowhere more abundant than in Ashe, Yancey and Burke. It is 40 to 45 feet high, with a diameter of 12 to 15 inches. The leaves are 8 to 9 inches long, 4 to 6 broad, and though a third smaller, are very much like those of No. 5 in form; the base in this, as in that, being divided into rounded lobes or ears. The flowers are 3 to 4 inches broad, pure white, and of agreeable fragrance. The cones are 3 to 4 inches long, and, like those of the *Umbrella Tree*, of a beautiful rose color when ripe. This tree bears removal remarkably well, it having been cultivated in the open air near Philadelphia, but it would probably require the protection of shade in our low country.

7. Heart-Leaved Cucumber Tree. (M. cordata, Michx.)—Often confounded with the *Cucumber Tree*, to which it bears a general resemblance, though it is a very distinct species. It is confined to declivities of the mountains from Ashe County to Georgia. It has a regular oval summit, is 30 to 50 feet high, 12

to 18 inches thick, with a straight trunk, the bark of which has some resemblance to that of Sweet Gum or of a young White Oak. The leaves are roundish and heart-shaped, 4 to 6 inches long, 3 to 5 wide. The flowers are yellow, the inside faintly streaked with red, and nearly 4 inches broad. The cones are about 3 inches long and 1 thick. This is smaller than the *Cucumber Tree*, but is equally desirable in private grounds as well for its symmetrical form as for the beauty of its flowers and its luxuriant foliage.

SERVICE BERRY. (Amelanchier Canadensis, Torr. and Gr.)—Universally known in our mountains under the name of *Sarvices*. In the Lower District it is called *Service Tree* and *Wild Currant*. In the latter section of the State, it is hardly more than a shrub, and is common along branches and swamps. In the former, it inhabits the shaded sides of the mountains, and is 15 to 25 feet high. The fruit is here much sweeter, more juicy and palatable, like the *Medlar*, than in other parts of the State, and trees are sometimes recklessly cut down to obtain it. It is purplish and about the size of some of our Red Haws. This shrub or tree, when displaying its profusion of clustered white blossoms in early Spring, is not without beauty, and is found enumerated in the catalogues of some northern nurseries as *The Snowy Medlar*. A name so promising has occasionally led to its importation into the State for the adornment of a garden or shrubbery; but I have never known it preserved over one season's exhibi-

tion, the owners apparently depreciating a beauty so common.

1. Crab Apple. (Pyrus coronaria, Linn.)—Most common in the Northern and North-western States, but extending southward along the mountains, where alone it is seen in this State. In Yancey and Haywood Counties it is very abundant, usually about 15 to 20 feet high, and 5 to 8 inches through; but in some situations considerably larger. The leaves are cut or lobed, not unlike those of the Red Maple. The flowers are of great beauty and diffuse their grateful fragrance to a long distance. The fruit is too austere for eating, but makes excellent preserves and jelly, though requiring much sugar.

A celebrated Cider Apple, known as *Hughes's Crab*, I suppose is a seedling from this species.

2. Narrow-Leaved Crab Apple. (P. angustifolia, Ait.)—This extends from Pennsylvania southward, chiefly in those regions not occupied by the former. It is rather common in our Lower and Middle Districts, and reaches into the lower part of the Upper. It is of about the same height with No. 1, but the fruit and leaves are much smaller, the latter being narrow and merely toothed on the edge. The flowers are beautiful and fragrant, as in the other species.

3. Choke Berry. (P. arbutifolia, Linn.)—A mere shrub 2 to 3 feet high, introduced here only to complete an account of the genus. The fruit is berry-like, as in the *Mountain Ash*, but has the same struc-

ture as an apple, with seeds of the same appearance and taste. It grows in small clusters, and is rather dry and astringent. We have two varieties of this:—one, with a red or purple fruit, found on the borders of branches and bays in the Middle and Lower Districts;—the other, in the mountains, and having a purplish-black fruit.

4. Mountain Ash. (P. Americana, D. C.)—This charming tree is but little known in this State, even in the mountains where it grows. At the North it is highly prized as an ornament in yards, especially for the beauty of its large clusters of scarlet berries, which hang upon the tree through the Winter. It is scarcely distinguishable from the *Mountain Ash* or *Rowan Tree* of Great Britain. It is not very rare on our higher mountains, from Ashe to Macon, where it is called *Wine Tree* (from a kind of liquor said to be made from it) and *Mountain Sumach*. The foliage is more like that of a *Sumach* than of any other of our trees; and in this respect, as indeed in every other, the general aspect of the tree is so unlike that of an *Apple Tree*, that none but a Botanist would suspect a relationship. The flowers are of a dirty white, in spreading clusters like those of the Elder, succeeded by berry-like scarlet fruit. In favorable soil this is from 12 to 20 feet high; in rocky ground, often a mere shrub.

Persimmon. (Diospyros Virginiana, Linn.)—Common in the United States from Rhode Island and New York southward, and in all the Districts

of this State. It varies much in height according to situation and soil, but is usually from 30 to 40 feet, though sometimes as high as 60, with a diameter of 18 to 20 inches. When standing alone it has a very symmetrical form and is a handsome tree. The heart-wood is of a brownish tint, hard, compact, strong and elastic, but is said to be liable to split. It has been used for large screws, mallets, shoe-lasts (considered equal to those made of Beech), and for the shafts of vehicles, which are said to be better than those made of Ash. With us the wood does not appear to be much used. The inner bark is astringent and tonic, and has had some reputation for being useful in intermittent fevers. The intolerable astringency of the green fruit is well known. When ripe it is liked by many, and is the basis of a beverage, by no means despicable, called '*Simmon Beer*. It is sometimes pounded up with bran, and the cakes, dried in an oven, preserved for making beer with the addition of hops and yeast. Brandy has been distilled from the fermented fruit, which is said to become good with age.

Mulberry. (Morus rubra, Linn.)—Well known throughout the Union, but most abundant in the Western States. It grows in all parts of this State, but is least abundant in the Lower District. It is from 50 to 70 feet high, and 1 to 2 in diameter. When in proper soil, and unobstructed in its lateral expansion by surrounding trees, this becomes a tree of fine form and casts a very thick shade. The

heart-wood is yellowish, fine grained and compact, but lighter than *White Oak*. It has much strength and solidity, and is thought by many to be as durable as *Locust*. It is much used in fencing and in ship and boat building. The leaves are too thick and rough for feeding silk-worms, though they have been used for the purpose in the absence of better. The fruit is deep red or purple, of a sweet and acidulous flavor quite agreeable to the taste. Though gently laxative, it is probably a wholesome fruit.

The *White Mulberry* (M. alba), a native of Asia, is occasionally seen about houses, and is the tree chiefly used on the old Continent for rearing silk-worms. The *Chinese Mulberry* (M. multicaulis) is only a variety of the *White*, of smaller size and larger leaves. The *Black Mulberry* (M. nigra) of Europe is sometimes cultivated in this country, but I have not observed it in this State. The *Otaheite* or *Paper Mulberry* (Broussonetia papyrifera), a native of the Pacific Islands, is common in our yards, and is commendable for its rapid growth and heavy shade, but becomes a nuisance from the numerous shoots springing everywhere from its spreading roots.

Cedar, or Red Cedar. (Juniperus Virginiana, Linn.)—Not uncommon throughout the country from New England to the Gulf of Mexico, but the soil and climate of the South are most favorable to its complete development. It is from 30 to 40 feet high, with a diameter of 10 to 12 inches, but is smaller in the mountains and western parts of the State than

in the Lower District. In old fields solitary trees are sometimes seen of larger dimensions than are above given. It is not abundant enough, however, in any part of the State, to be used in the arts. The heart-wood is of a red color, but the sap is white. It is odorous, compact, fine grained and very light, but heavier and stronger than *Cypress* or *White Cedar*. It possesses durability in an eminent degree, and is applied to all purposes which require this quality. That which is grown near the coast is of better quality than what is produced farther inland.

This tree varies so much in the color, length and spread of the leaves in different situations and at different ages, that some persons make two species of it, one of which they call *Savin*. They are, however, but one species. The berries of this tree have been a little employed in the United States in the preparation of gin, as those of the Juniper are used in Europe. Boxes and cabinets made of the wood are exempt from insects, its odor being offensive to them.

MISCELLANEOUS.

The remaining trees have all a *dry fruit*, but of various kinds, and no very intimate relationship—to be arranged in two GROUPS.

The first GROUP includes those trees which have either flowers or fruit in somewhat the form of tassels, as in the Willow, Cottonwood and Birch.

POPLARS OR COTTONWOODS.—These are generally designated by the latter name in this country, but they are true *Poplars*. Those of them called *Aspens* are remarkable for the easy vibration of the leaves when scarcely a breath of air is perceptible. This results from one end of the leaf-stem being flattened contrary to the plane of the leaf. The constant motion of the leaves is supposed to have been the reason for giving these trees the name of Populus or Poplar, because they, like the *populace*, are never at rest. It is a more malicious spirit of slander that has given them the name of *Women's Tongues*. The wood of all the species is soft and brittle, but some of them are used in various kinds of light wood-work.

1. Carolina Poplar. (Populus angulata, Ait.) —This does not reach northward farther than southern Pennsylvania. It becomes more abundant in the low country of all the Southern States upon the marshy banks of rivers, in company with *Cypress*, *Red Maple*, etc. It is rare in the Middle District, but is sometimes cultivated there about houses. It is 60 to 80 feet high, with an expanded summit and pleasing foliage. The leaves are 3 to 5 inches long (on young shoots 6 to 8), thin, always smooth and bright on both sides, and their edges have small scalloped teeth. They are rounded at the base, and are marked with yellowish nerves. The buds are short, deep green, and not covered with gum. The young branches and annual shoots are angular, from

which character its botanical name of *angulata* is derived. The wood does not appear to be used. This is very similar to the *Cottonwood* or *Cotton Tree* so common on the Western rivers.

2. Cotton Tree. (P. heterophylla, Linn.)—A native of the Middle, Western and Southern States, yet is so rare as to escape general notice. I do not remember to have met with it in this State, except in rich swamp lands on the lower course of the Cape Fear; but it probably occurs in similar ground elsewhere. It is a majestic, showy tree, 70 to 80 feet high, 2 to 3 in diameter, with a very thick, deeply furrowed bark. The young branches and shoots are round. The leaves, 3 to 5 inches long, and with rounded teeth, are covered on the underside with a thick soft down, which partially falls off with age. The wood is much like that of the preceding.

3. Large Toothed Aspen. (P. grandidentata, Michx.)—Not so common in the Southern as in the Middle and Northern States. With us it belongs to the upper part of the Middle District, is about 40 feet high, and has a smooth gray bark that seldom cracks. The leaves are 3 to 5 inches long, about the same breadth, with large open teeth on the edges, and the underside clothed when young with a thick white down which wholly falls away before the end of Summer. This tree is occasionally seen adorning the streets of our villages.

The *Lombardy Poplar* (P. dilatata, Ait.), a native of Italy, is common in cultivation about old settlements,

BIRCHES.—These are products chiefly of high latitudes, both on the Eastern and Western Continents. In this State we have but a single species below the mountains.

1. Red Birch. (Betula nigra, Linn.)—Common on the banks of rivers from the coast to the mountains, and known here only as *Birch*. This is sufficient designation where no other species occurs, but it is called *Red Birch* in those States and regions where it is accompanied by others. It is from 40 to 60 feet high, and 1 to 2 in diameter. It has wood of compact grain, and light reddish tint, but not of very high value, nor is it much used. It is sometimes employed in this State for the railing of balustrades, and the like purposes. Hoops for casks may be made from the branches and shoots, but of inferior quality.

2. Black Birch. (B. lenta, Linn.)—In our mountains, where alone this tree is found within this State, it is simply called *Birch*. The most common name for it in the United States is the one above given. In the mountains of Virginia it is called *Mountain Mahogany;* in New England *Sweet Birch* and *Cherry Birch*. It is from 30 to 50 feet high, with a smoothish trunk, resembling that of a Cherry tree. The wood, freshly cut, is of a rosy hue, which becomes darker by exposure, and similar to that of *Wild Cherry*, and is used, like that, for several sorts of cabinet work. It has considerable strength, is of fine close grain, and susceptible of a brilliant polish, and is the most valuable of all the Birches known,

though hardly equal to *Wild Cherry*. Furniture made of it, as chairs, tables, etc., will, in time and by careful use, acquire very much the appearance of Mahogany. The leaves and blossoms have considerable fragrance, and the bark of the young shoots has a delightful spicy flavor like that of the *Mountain Tea* or *Spicy Wintergreen*. The tree is one of much beauty, with dark graceful foliage, and a symmetrical form.

3. YELLOW BIRCH. (B. excelsa, Ait.)—This is a northern tree, as south of the mountains of New York, with the exception of small patches in New Jersey and Pennsylvania, and the three or four stocks which I found near the (highest) summit of Black Mountain, it is unknown. Its yellowish-silvery bark, scaling off in thin sheets, like that of the *Paper* or *Canoe Birch*, will at once distinguish this from the two preceding. It is about 25 feet high. The timber is rather inferior to that of *Black Birch*. It is a handsome tree, and its twigs slightly aromatic.

WILLOWS.—There are 20 or 30 species of these in the United States, nearly all of which belong exclusively to the North. A few, though they are of no importance, extend to this State and farther south. The value of some species in wicker-work is generally known. The articles manufactured from them are made from the young, slender and flexible twigs and shoots.

1. BLACK WILLOW. (Salix nigra, Marsh.)—This is the only native Willow in the State that becomes

a tree. It is 15 to 25 feet high, with a rough dark-brown bark, very common along streams from the coast westward. The wood is soft and of little use; but when the stocks are of sufficient size, they are said to make durable light timbers for boats. The roots give an intensely bitter decoction, which is thought by some to be good for purifying the blood, and a remedy for intermittent fevers.

2 Gray Willow. (S. tristis, Ait.)—A shrub 1 to 2 feet high, very much branched, of a dull gray aspect on account of the young branches and leaves being covered with an ash-colored down or wool. The leaves are from 1 to 1½ inch long with a hardly perceptible stem, narrow, sharp at each end, but tapering from the base towards the upper end, and with the veins prominent on the underside. I have met with this insignificant plant only in the mountain counties.

3. Bush Willow. (S. humilis, Marsh.)—Larger than the preceding, 2 to 4 feet high, but of similar general aspect, the leaves two or three times longer and broader, and found both in the Middle and Upper Districts, rarely in the Lower. During Summer the branches of this and No. 2 have cone-like excrescences on their ends.

4. Silky-Leaved Willow. (S. sericea, Marsh.) —This is 3 to 6 feet high, with leaves 2 to 3 inches long, borne on conspicuous stems, pale, and with silky hairs on the underside.

The *Weeping Willow* (S. Babylonica) is common,

and the *Yellow Willow* (S. vitellina), occasionally seen in cultivation.

Hornbeam. Ironwood. (Carpinus Americana, Michx.)—Among the commonest productions of the country and well known by one or other of these names. It is found on the banks of streams in all parts of the State, generally 12 to 15 feet high, but sometimes 25 to 30, with a diameter of 5 to 6 inches. The trunk has a smooth gray bark, and at the base is irregularly fluted or ridged. The wood is white, exceedingly hard, compact and fine grained, but the small size of the tree forbids its use except for inferior purposes.

Hop Hornbeam. (Ostrya Virginica, Willd.)—This and the preceding have characters and qualities so very similar that they are generally called by the same names. But the bladdery fruit of this looks so much like *Hops* that it can very easily be distinguished through the Summer. It is only in the Upper District that I have met with it, and very rarely there. It is 20 to 30 feet high, with a brownish finely furrowed bark, the trunk not ridged at the bottom like the preceding. The wood is like that, and also used for levers, &c., for which we have nothing better adapted, on account of its great strength and toughness. For mill-cogs, wedges, mallets and the like, both these species would, doubtless, answer well.

The remaining Group includes a heterogeneous mass of dry-fruited Trees, but fortunately nearly all

are so well known, that they will need no particular description.

Sycamore. (Platanus occidentalis, Linn.)—This is the name generally given, I believe, to this tree in North Carolina; but it is more extensively known in the United States as *Buttonwood*. In some sections it is called *Water Beech* and *Plane Tree*. The last would be most appropriate, if we were governed in our choice by the application of the names of kindred species in Europe. The *Sycamore* of Europe is a species of *Maple*, having no relationship with what we call by that name.

This tree, like the *Planes* of the old Continent so much celebrated by the ancients, is among the largest in the Temperate Zones. It is common over the United States on the borders of streams, where the soil is moist and fertile, conspicuous for its white bark and the stately size of its trunk. In such situations it is found throughout the State, but is least abundant in the Lower District. Although occasionally found here of large dimensions, it is not of such size as in the virgin forests of the West, where this tree has its peculiar home, and where it is sometimes seen without branches to the height of 60 to 70 feet, and with a circumference of 40 to 50 feet. A hollow section of a trunk was once used in Ohio as a bar-room;—the same, I believe, now exhibited in a New York Museum. This reminds us of the famous Plane tree of Lycia, mentioned by Pliny, whose hollow trunk gave shelter for a night to Licin-

ius Mutianus and a retinue of eighteen persons. Its interior was 75 feet in circuit. The wood of our tree becomes reddish in seasoning, of a fine close grain, and takes a better polish than *Beech*, to which it bears some resemblance. As it is liable to warp, it is not much used in cabinet work, except for bedsteads. It decays rapidly by exposure to the weather, and is therefore suitable for such articles only as are thoroughly sheltered. The rapid growth, great size, and thick shade of this tree, render it valuable for avenues and shaded grounds.

Sweet Gum. (Liquidambar Styraciflua, Linn.)—One of the most extensively diffused trees in North America, it being found from Southern New England to Mexico. It is from 40 to 70 feet high, and 2 to 3 in diameter. The wood is reddish, compact, fine grained, and takes a fine polish. Though inferior to Oak, it is suitable for objects requiring toughness and solidity. When properly seasoned, it serves well in the upper frame-work of buildings, and lasts better than any of the *Red Oaks*. It is sometimes employed for lining the inside of Mahogany furniture, to which it is well adapted by its color, lightness, and fine grain. Though inferior to *Black Walnut* and *Cherry*, it is sometimes used for similar purposes in the manufacture of furniture; but is not durable unless sheltered from the air. The bruised leaves have a resinous fragrance, and fresh ones are successfully used in cases of dysentery. The dusty matter in the ripe burs is only the abortive seeds. The fragrant

gum is the hardened juice. This is a beautiful tree, especially in Autumn when the dying foliage has taken its hue of deep crimson, and should be oftener seen in private grounds.

Tulip Tree, or Poplar. (Liriodendron Tulipifera, Linn.)—This tree is rarely surpassed in elegance of form, in size, beauty of foliage, or showiness of blossom, by any tree of the American forests. In some of the Northern States it is called *White Wood* and *Canoe Wood*. In Europe, where it has been long and extensively introduced, it bears the name of *Tulip Tree* (which has been adopted to some extent in this country), from the resemblance of its flower to that of a Tulip. This is much preferable to that of *Poplar* (which it bears in this and the Western States), because it has but little resemblance in any particular to the true Poplars. It is native in all parts of the State, but is not so common in the Lower District as in others. It is from 60 to 100 feet high, with a very straight tapering trunk, and has a diameter of 2 to 3 feet. There is a stock on the South Fork of Toe River, which is near 9 feet in diameter. The wood is fine grained, works easily and takes a good polish. It is heavier and more compact than that of the *Poplars*. The heart is yellowish, and the sap-wood white, though when grown in dry gravelly soils the whole wood is white and coarser. These are distinguished as *Yellow* and *White Poplar*, the former being most valuable. For the rafters and joists of buildings the timber is the best substitute

for Pine, Cedar and Cypress. The boards are often used for the exterior and interior work of houses, even for shingling, as they are durable and not liable to split from the influences of heat and moisture. They are much used by coach, chair and trunk makers, and are very valuable for all kinds of woodwork requiring lightness, strength and durability.

The bark of the root, mixed with equal parts of *Dogwood* bark, is a domestic remedy in intermittent fever. Some physicians have employed it successfully alone, or accompanied with laudanum, in remittent and intermittent fevers, cholera infantum, hysterical affections, and for worms; but others have denied its efficacy. Dr. Darlington says that the bark of the root and young tree is a valuable aromatic bitter.

LINN OR LIME TREES.—These are handsome trees, as well for their form as for the pleasing hue and fine shade of their foliage. They are known in the Northern States by the names of *Lime Tree* and *White Wood*, but more generally by that of *Bass Wood*. In Europe the species of this genus are called *Linden* and *Lime Trees*. The wood is white and soft, and is used for similar purposes with that of the *Tulip Tree*, where the latter is not found, but is softer and splits more readily. It is well adapted for turners' work, and is extensively used in the manufacture of wooden ware. The inner bark, when macerated, separates into broad fibres, which are used for making

coarse cordage and matting. In Europe this kind of stuff is called *Bast* (whence the name of *Bass Wood*), and large quantities are exported from Russia. The bark also contains a good deal of mucilage, from which liniments are prepared for burns and scalds. In Europe, the honey made from the flowers of the Linn is considered the best in the world, and when made exclusively from them, sells for more than double the price of any other. The flowers of our American species would very likely serve as well in improving the quality of honey. There are but 3 species of Linn in the United States, and all are found in North Carolina. The flowers of the Linn are small, cream-colored, growing in loose clusters upon a common stem which is attached to the middle of a narrow, strap-like leaf or bract;—a character that will distinguish these trees from all others.

1. American Linn. (Tilia Americana, Linn.)—This is found from Canada to Georgia; in this State confined to the mountains and the upper part of the Middle District. It is a handsome tree, 50 to 80 feet high, 1 to 4 in diameter. The leaves are 3 to 4 inches broad, heart-shaped, but one side smaller than the other at the base, smooth or nearly so, and paler green on the underside. The timber of this species is considered more valuable than that of the others.

2. White Linn. (T. heterophylla, Vent.)—More abundant in the Middle and Western States than elsewhere. In this State it is most common in the Upper District, but occurs sparingly in the Mid-

dle and Lower. It seldom exceeds 40 feet in height, with a diameter of 12 to 18 inches. The young branches have a smooth silver-gray bark, by which it can be distinguished in Winter from the other species. The leaves are quite large, 6 to 8 inches broad, deep green above, and with a silver-white down underneath.

3. Southern Linn. (T. pubescens, Ait.)—This is confined to the Lower Districts of the Southern States, choosing cool fertile soils upon the borders of swamps and rivers. It is 40 to 50 feet high, resembling No. 1, of which it may be only a variety. The leaves are 2 to 4 inches broad, shaped as in No. 1, the edges with fewer and more distant teeth than in No. 2, and with a rusty, thin, vanishing down on the underside.

Sour Wood. Sorrel Tree. (Oxydendrum arboreum, DC.)—This extends from Pennsylvania southward, especially along the mountain valleys. In our Lower District it is rare, not uncommon in the Middle, but is most abundant in the lower parts of the mountains. It is usually a small tree, but in some localities, as on the upper waters of the Catawba, it attains a height of 50 to 60 feet, and a diameter of 12 to 15 inches. The wood is of no value. The leaves, which are not unlike those of the Peach, are acid like Sorrel, from whence its names are derived. These, in the absence of Sumach, are sometimes used for dyeing wool of a black color. The small flowers, about the size and form of those of our

swamp Huekleberry, are in large loose elusters, whieh hang in profusion over the branches with somewhat of a plume-like graee, and make this tree one of the ornaments of our woods.

Loblolly Bay. (Gordonia Lasianthus, Linn.)—This pretty tree, belonging to the family of the *Camellias*, belongs within the range of the *Long-leaved Pine*, and is there eonfined, I think, to the braneh-swamps and bays within 100 miles of the eoast. It is from 50 to 70 feet high, with a diameter of 18 to 24 ineles. When young, it is of a fine pyramidal form; but with age the branches spread irregularly, and the top, owing possibly to the brittleness of the wood, seems subject to early deeay. The leaves are evergreen, with sharply toothed edges. The flowers are about 2 inches broad, white, and somewhat fragrant, and young trees in blossom are very attraetive. The wood is of rosy hue, of fine texture and silky lustre, but is light and brittle, and subjeet to rapid deeay, unless kept perfeetly dry. The bark is valuable for tanning, but is not abundant enough for extensive use. The fruit is a small, dry, woody eapsule, $\frac{1}{2}$ to $\frac{3}{4}$ ineh long.

Snow Drop Tree. (Halesia tetraptera, Linn.)—Found but a short distanee beyond the northern line of this State. In our Lower Distriet it is very sparingly distributed. In the Middle Distriet I have not seen it east of Surry and Meeklenburg, but from thenee westward to Cherokee it is not uneommon along water eourses, espeeially above that part of

their course where they are generally turbid. It is ordinarily a small tree, from 10 to 25 feet high; but upon some of our mountain streams it acquires nearly double these dimensions. It is not of handsome form; but its clusters of white bell-shaped flowers (similar to those of the garden *Snow Drop*) about half an inch long, give it an aspect of much beauty when in blossom. I have never seen it in cultivation, but it deserves a conspicuous place in the cool moist parts of ornamented grounds. The fruit is greenish and slightly juicy when young, becoming dry. It has 4 winged angles, is about 1½ inch long, with a bony nut inside.

Planer Tree. (Planera aquatica, Gmel.)—This tree, closely related to the *Elm* and the *Hackberry*, is rare in the Atlantic States and unknown north of the Cape Fear River. From thence southward it is found on the borders of streams and swamps, and may very easily be mistaken, at a little distance, for the *Hornbeam*. It is from 20 to 40 feet high, and 8 to 15 inches in diameter. The wood is said to be hard and strong, but is too rare with us to be of any use. The leaves are about 1½ inch long, and much like those of our *Small-leaved Elm*. The flowers are in a small, round greenish cluster about the size of small Peas and appearing before the leaves. The fruit is a nut covered with warty scales, quite small.

THE

Shrubs of North Carolina.

Under this head will be included those woody plants which do not ordinarily exceed 20 feet in height, whatever may be their form. So many of these are without names, and there is such a variety in their fruits or seed-vessels, that I cannot make so intelligible an arrangement of them for popular use as I have done for the Trees. Still, I hope that most of them, and all that are of any importance, can be identified without much difficulty. They will be arranged, like the Trees, according to the character of their fruit, under the two primary divisions of the *Fleshy Fruited* and *Dry Fruited*, beginning with the former.

Quite a number of *shrubs* have been already described under the class of Trees, wherever a genus included both classes.

RED HAWS.—Thorny shrubs, sometimes tree-shaped, with white flowers, mostly in flat topped clusters, and colored (generally red) fruit containing 1 to 5 bony seeds.

1. SCARLET HAW. (Cratægus coccinea, Linn.)

—Grows in the Middle and Upper Districts, 6 to 12 feet high, with stout thorns 1 and 2 inches long. The leaves are smooth and thin, about 2 inches long and broad, cut into several small segments on each side. The fruit is bright red, ½ inch or more long, and eatable.

2. Washington Thorn. (C. cordata, Ait.)—I have seen this only in the Middle District. It is a very beautiful shrub when in blossom, as may be seen on the Cape Fear near Averasboro in May. It is from 10 to 20 feet high, the thorns about 2 inches long, and rather slender. The leaves are 2 to 3 inches long, cut into 3 divisions somewhat like those of the Red Maple. The fruit is bright crimson, about ¼ inch long.

3. Parsley-Leaved Haw. (C. apiifolia, Michx.)—This, so closely resembling the *Hawthorn* of England, is found in the Lower and Middle Districts. The leaves are about 1 inch long, and much cut up into small divisions, from which this handsome shrub or small tree derives its name, and by which it is easily distinguished from all the other species. The fruit is red and about ¼ inch long.

4. Cockspur Thorn. (C. Crus-galli, Linn.)—The most abundant of our *Thorns* or *Haws*, and found in all the Districts. It is 10 to 20 feet high and armed with sharp thorns 2 inches or more long. The leaves are about 2 inches long, rather thick and stiff, shining green above, somewhat tapering from the upper part downward, and toothed above the middle. The

fruit is red, about ⅓ inch long. This is our best species for hedging. But it should be remembered that none answers well if left at random to an upward growth, and is not well laid and so regularly trimmed or cut in as to take a lateral growth and to branch freely near the ground.

5. Black Thorn. (C. tomentosa, Linn.)—A shrub or small tree in the Middle and Upper Districts, with large clusters of flowers, which are ¾ inch or more broad, and a round or pear-shaped, edible fruit, which is orange-red and about ¾ inch long. The leaves are 3 to 5 inches long, of an oval or oblong form, finely toothed and sometimes cut at the summit, somewhat hairy on the underside, and more or less furrowed along the veins above.

There is a form of this (var: punctata, Gray) very common on the tops of our mountains, with the leaves smaller, more narrowed towards the base, and the furrows on the upper surface deeper, and the veins more prominent beneath. The fruit is round, yellowish or dull red, sprinkled with whitish dots.

6. Narrow-Leaved Thorn. (C. spathulata, Michx.)—Not uncommon in the Lower and Middle Districts, 10 to 15 feet high, with quite small flowers and fruit, but rather ornamental. The leaves are smooth and shining, ½ to 1½ inch long, ¼ to ½ inch wide, toothed at the upper end and tapering from near the top down to the stem. The fruit is red and in numerous clusters.

7. Summer Haw. (C. flava, Ait.)—A small tree

15 to 20 feet high, in sandy woods, with fruit ½ to ⅔ inch thick, pear-shaped, and greenish-yellow. The leaves are 2 to 3 inches long, wedge-shaped, the lower part tapering into a short stem with small dark glands on the edges. The flowers but from 2 to 5 in a cluster.

8. Hairy Thorn. (C. glandulosa, Michx.)—A small tree with coarse bark and spreading branches, and the leaves, branchlets and flower stems covered with soft hairs, especially when young. The leaves are about 1 inch long, rather thickish, wedge-shaped, the edges generally dotted with dark glands. The fruit is small, round, and red. The flowers are 3 to 6 in a cluster.

9. Dwarf Thorn. (C. parvifolia, Ait.)—A small shrub 2 to 5 feet high, very common in sandy woods throughout the Lower and Middle Districts, and with a whitish down on most of its parts. The leaves are ½ to 1½ inch long, broad, wedge-shaped, toothed, with hardly any stem. Flowers solitary, or 2 or 3 together. Fruit round or pear-shaped, greenish-yellow, rather large and dry.

Barberry. (Berberis Canadensis, Pursh.)—Found in Lincoln, thence westward, especially in Buncombe, Haywood and Macon Counties. It is not known to exist north of Virginia, and is the only native Barberry in the United States. The European species (B. vulgaris) is thoroughly naturalized in New England. Ours is a pretty shrub, 2 to 4 feet high and somewhat prickly. The fruit is an oblong,

red and acid berry, which makes an agreeable conserve, and a cooling drink in fevers The leaves are also slightly acid. It is probable that this, like the European species, which it closely resembles, would furnish a yellow color by boiling the roots in lye; and that the inner bark of the stems would dye linen of a fine yellow with the assistance of alum.

GOOSEBERRIES AND CURRANTS.—These belong to one genus, but are distinguished—the former, by the small sharp thorns at the base of the leaves, sometimes the fruit being prickly, and generally (always in the North Carolina species) by the flower stems having from 1 to 3 flowers; the latter, by the absence of thorns, smaller fruit (never prickly), and the flowers numerous in long clusters. They are found only in the mountains.

1. PRICKLY GOOSEBERRY. (Ribes Cynosbati, Linn.)—Distinguished from the others by its prickly fruit, which is brownish when ripe, and eatable.

2. SMOOTH GOOSEBERRY. (R. rotundifolium, Michx.)—This is 3 to 4 feet high, the leaves 1 to 2 inches broad, about half the size of the preceding, the fruit small, purple when ripe, and of fine flavor.

3. SLENDER GOOSEBERRY. (R gracile, Michx.)—Very similar to No. 2, but every way more slender and delicate, and quite rare.

4. FETID CURRANT. (R. prostratum, L'Her.)—Occurring chiefly upon rocks on our highest mountains and generally spreading on the ground. The

berry is covered with bristles and is not pleasant flavored. The whole plant exhales a disagreeable musky odor, which will readily distinguish it.

5. Bristly Currant. (R. resinosum, Pursh.)—This was discovered in our mountains by Fraser. I have not myself met with it. It is covered in every part, not excepting the fruit, with resinous glandular hairs, by which it may be recognized.

HUCKLEBERRIES.—The fruit so called in this State is comprised in two genera; the first (Gaylussacia) including those which have a *black* or *blackish* berry, and leaves generally covered with small glandular dots; the second (Vaccinium) including those with a *blue*, *red* or *greenish* berry. The blue ones are known in some States as *Blueberries* or *Bilberries*. The red are *Cranberries*. The greenish one is in this State called *Gooseberry* and *Deerberry*.

1. Blue Huckleberry. (Gaylussacia frondosa, Torr. and Gr.)—Common in the Lower and Middle Districts on the borders of low grounds, 2 to 3 feet high, with pale, somewhat wrinkled leaves, which are whitish underneath, and 1 to 3 inches long. The berries are dark blue, large and sweet, perhaps the finest flavored we have, ripening in June.

2. Dwarf Huckleberry. (G. dumosa, Torr. and Gr.)—A low species about a foot high, with creeping roots, very common in dry woods of the Lower and Middle Districts. It is somewhat hairy and glandular, the leaves broad, wedge-shaped, green on both

sides, and the fruit smooth, black and insipid. A larger form of this (var: hirtella) has the berries also hairy.

3. Black Huckleberry. (G. resinosa, T. and Gr.)—Belongs to the Middle and Upper Districts, 2 to 3 feet high and much branched. The leaves are 2 to 3 inches long, and thickly sprinkled with resinous atoms. The berries are black, shining and very pleasant. There is a white variety of this, found in the mountains by Mr. Buckley.

4. Bear Huckleberry. Bearberry. (G. ursina, Gray.)—Found on the sides of the mountains south of the French Broad River, 2 to 3 feet high, and resembling No. 3. But in the latter the flowers are cylindrical; in the Bearberry cup-shaped. The berry is purplish or dark red, insipid and dry, ripening in July and August.

1. Swamp Huckleberry. (Vaccinium corymbosum, Linn.)—Abundant in swampy grounds of the Lower and Middle Districts, and probably extending into the Upper. It is from 5 to 10 feet high, with very variable leaves, but generally thin, pale and smooth. The berries are large, deep blue, subacid and pleasant, ripening in May and June.

There is a variety of this (var: atrococcum, Gray), having a similar range and locality and size, but much less common, with thicker leaves, which are white-downy underneath, and with berries *dark blue*. Dr. Hunter finds this variety with a *white* berry in Lincoln and Burke Counties.

2. Pale Dwarf Blueberry. (V. Constablæi, Gray.)—About 1 foot high, abundant on the bald summit of Roan Mountain (where it was first discriminated by Prof. Gray,) and not unlikely on others. It is of a pale whitish aspect, with leaves 1 to 2 inches long, and blue sweet berries.

3. (V. tenellum, Ait.)—Common on the borders of small swamps in the Lower District and extending somewhat into the Middle: about 2 feet high, with green, angled branches. The leaves are ½ to 1 inch long, narrow, wedge-shaped, slightly toothed at the top, and of a bright green. Berries black, small, of little worth.

4. Bristly Huckleberry. (V. hirsutum, Buckley.)—Discovered in the Cherokee Mountains by Mr. Buckley, and easily recognized by its bristly branches, leaves, flowers and fruit.

5. Deerberry. Gooseberry. (V. stamineum, Linn.)—Very common all over the State in dry woods, 1 to 4 feet high, and very pretty when in blossom. The berries are greenish-white, sour and astringent, larger than any other of our Huckleberries.

6. (V. erythrocarpon, Michx.)—A shrub 2 to 4 feet high, found upon Grandfather, Flat Top and Roan Mountains. The leaves are rather hairy and with small teeth on the edges. The flowers have long divisions that are rolled backwards precisely like those of the *Cranberry*. The fruit is small, reddish or purplish, and insipid, somewhat like that of the *Bearberry*.

7. Sparkleberry. (V. arboreum, Michx.)—Found from the coast to Cherokee, 8 to 20 feet high, the leaves smooth, rather stiff and shining. They are evergreen, at least in the Lower District. The fruit is black and small, dry, granular and slightly astringent, but of pleasant flavor, ripening in October. When in blossom it is quite a showy shrub. The bark of the root is very astringent, and is used in chronic dysentery.

8. Creeping Huckleberry. (V. crassifolium, Andr.)—A small species with stems (1 to 2 feet long) creeping close upon the earth in wet savannas of the Lower District. The leaves are small, ¼ to ½ inch long, evergreen, thick and shining. The fruit is red, becoming black, tasteless.

9. Cranberry. (V. macrocarpon, Ait.)—A small trailing plant with pale evergreen leaves, common in the mountain swamps of Ashe and Yancey, and also in Pasquotank, Hyde and other counties in the north-eastern part of the State. The fine acid fruit of this plant is well known and universally esteemed.

Coral Berry. (Symphoricarpus vulgaris, Michx.)—A small shrub, 2 to 3 feet high, frequent in arid gravelly soils, especially by road sides, throughout the Middle District. The leaves are rather stiff, about 1 inch long, downy beneath. The flowers are of no beauty, but the compact clusters of dark red berries in the fork of nearly all the leaves, and which hang on through the Winter, have made it an object of attention among gardeners and florists. This is

sometimes so much of a nuisance on plantations, on account of its creeping tangled roots, as to have gained the uncouth name of *Devil's shoe-strings.*

Bermuda or French Mulberry. (Callicarpa Americana, Linn.)—Quite common in light soils and dry, open woods of the Lower District, especially along fence-rows and the borders of settlements. It is 3 to 6 feet high, with coarse, rough, grayish unsightly leaves, which are 4 to 5 inches long and round-toothed on the edges. But in Winter the numerous clusters of light-purplish berries which encircle the summit of the branches at regular intervals for 12 or 18 inches, give it a very striking and pleasing appearance. These berries are juicy, slightly aromatic and sweetish, and are sometimes eaten, but are probably not very wholesome.

Mistletoe. (Phoradendron flavescens, Nutt.)—Well known throughout the State, and needing no description. With us it seems to prefer the *Oaks* and *Locust*, but at the North and West, *Elms* and *Hickories.* Deer are very fond of this plant. This is a different plant from the European Mistletoe, the *aureus ramus* of Virgil.

1. High Blackberry. (Rubus villosus, Ait.)—This is our common Blackberry of the swamps and fallow lands, 4 to 10 feet high, and the leaves slightly hairy or smooth, and green on both sides. It is found throughout the State. The root of this is slightly astringent, and is a popular remedy for diarrhœa.

2. Low Blackberry. (R. cuneifolius, Pursh.)—Common in old fields and by road sides in the Lower and Middle Districts, 2 to 4 feet high, the leaves white and downy beneath. Smaller in all parts than No. 1, the berries generally sweeter.

3. Dewberry. (R. trivialis, Michx.)—Generally well known under this name, but most abundant in the Middle District. This is a trailing species with smooth green leaves, growing mostly in dry soils, and with larger, sweeter fruit than the preceding.

4. Swamp Blackberry. (R hispidus, Linn.)—A prostrate species like the preceding, found in the mountain swamps, but every way more delicate, with thinner leaves, and with weak prickles that hardly deserve the name. Fruit black, small and sour.

5. Black or Purple Raspberry. (R. occidentalis, Linn.)—Grows on the borders of woods and in thickets through the Middle District. The fruit is very pleasant but rather dry, and much inferior to the cultivated species.

6. Flowering Raspberry. (R. odoratus, Linn.)—Found only in the mountains along rivulets and in cool, shaded ravines. This is without prickles, but is covered with clammy hairs, is 4 to 5 feet high, and has leaves 6 to 7 inches long, divided into about 5 short segments. The flowers are quite ornamental, about 2 inches broad and looking like a small single Rose. The fruit is broad, red and dry, but pleasant flavored.

1. Swamp Rose. (Rosa Carolina, Linn.) — This

is from 3 to 6 feet high, is generally confined to low damp grounds, and has stout, *hooked* prickles.

2. Wild or Dwarf Rose. (R. lucida, Ehrh.)—Generally prefers dry soils, and is found in all the Districts. It is about half the size of No. 1, has the leaves shining on the upper side, and has *straight* prickles, which will distinguish it from the preceding.

3. Sweet Brier. (R. rubiginosa, Linn.) — Extensively naturalized along roads and about settlements, especially in the Middle District, and easily recognized by the pleasant fragrance derived from the rusty colored glands on the underside of the leaves. This is sometimes known as the *Eglantine*.

4. Cherokee Rose. (R. lævigata, Michx.)—Cultivated in the Lower and Middle Districts, often trained over fences, and, if well managed, serves well for hedging. It is remarkable for its smooth, dark, evergreen leaves and white single flowers. It is singular that the native region of this Rose is unknown.

1. Elder. (Sambucus Canadensis, Linn.)—There is no portion of the State, except the higher parts of the Mountains, where this shrub is not found. Its leaves are smooth and its berries dark purple. The inner bark is of popular use in ointments for sores. An infusion of the leaves is sometimes used for expelling insects from vines, &c. An infusion of the dried flowers is a domestic remedy for colds. The ripe berries afford a delicate test for detecting acids and alkalies.

2. Red-Berried Elder. (S. pubens, Michx.)—Grows only on the higher Mountains above the range of the preceding, from which it is at once distinguished by its red berries and the downy underside of its leaves. It belongs chiefly to a high latitude.

1. Black Haw. (Viburnum prunifolium, Linn.)—Common in rather dry rich soils from the coast to the lower part of the Upper District, 8 to 15 feet high, handsome when in flower. The blossoms are small, white, in flat clusters, which are two or three inches broad, and destitute of a common stem. The leaves, 1 or 2 inches long, are smooth and shining above. The fruit is about half an inch long, bluish-black, sweetish and eatable.

2. Possum Haw. (V. nudum, Linn.)—Has a similar range with No. 1, and grows in cold swampy grounds, 6 to 12 feet high. The flower-clusters in this are supported on a short common stem. The leaves are larger and of thicker texture than in the former, dull green above, and covered with rusty scales beneath. The fruit is a deep blue. In the Mountains I have heard this called *Shawnee Haw*.

There is a form of this (var: angustifolium), with smaller, narrower, and brighter leaves, which I have met with in Henderson County.

3. (V. obovatum, Walt.)—A shrub or small tree, growing on the banks of streams, but not common in this State. The leaves are ½ to 1 inch long, rather thick, smooth, broader at the upper end, and faintly

toothed. The flower-clusters are without a general stem. The fruit is black.

4. Sheep Berry. (V. Lentago, Linn.) — Found only in the Mountains, 10 or 15 feet high. The leaves are rather thin, 3 to 4 inches long, smooth, with a tapering point, sharply toothed, their stem and middle nerve beneath, together with the flower branches, sprinkled with rusty atoms. The fruit is first red, then bluish-black, and is eatable when fully ripe.

5. Arrow-wood. (V. dentatum, Linn.)—Grows in low grounds of the Lower and Middle Districts, but is not very common. It is 8 to 12 feet high, with ash-colored bark, and by the flowers and fruit would be at once recognized as belonging to the same genus as Nos. 1 and 2. The leaves are roundish, 2 or 3 inches long, coarsely and sharply toothed, thin and smooth, the lateral veins quite straight, and deeply impressed above. The fruit is roundish and deep blue, and slightly rough. The young straight branches of this were used by the Indians for making arrows.

6. Downy Arrow-wood. (V. pubescens, Pursh.) — Very similar to No. 5, but smaller, 3 or 4 feet high, the underside of the leaves downy, and growing only in the rocky soil of the Mountains.

7. Maple-leaved Arrow-wood. (V. acerifolium, Linn.)—A shrub 2 to 5 feet high, found in the Mountains and on rocky hills of the Middle District, as low down as Orange, with leaves 3 or 4 inches long,

shaped like those of a *Maple*. The berries are whitish, becoming purplish-black. The slender stems, by removing the pith, make good *fuse-sticks* for blasting, and will serve equally well for blasts of tobacco-smoke.

8. Hobble-Bush. Tangle-Legs. (V. lantanoides, Michx.) — A small straggling shrub found in cold, damp places in the Mountains. The branches spread upon the ground, and, taking root at their ends, form well secured loops for tripping the feet of inexperienced wayfarers; a habit which has been revenged upon by the unlucky, in the names imposed upon it of *American Wayfarer's Tree* and the *Devil's Shoestrings*. The leaves are 3 to 6 inches broad, heart-shaped, very veiny, the underside having a rusty down. The berries are first crimson, then black. The flowers on the margin of the broad clusters of this species are very large (by abortion), like those of the well-known *Snow-ball* of our Gardens, which is a species (V. Opulus) of this genus.

Prickly Ash. (Aralia spinosa, Linn.) — Found in tolerably rich soil from the coast to Cherokee, but not very abundant in any locality. It is seldom 20 feet high with us, and is remarkable for its straight, club-shaped, prickly stem or trunk, with the compound leaves spreading like those of a Palm from its summit. An infusion of the fresh bark of the root is emetic and cathartic, and is employed, as are also the berries, in spiritous infusion, in rheumatic affections. These are thought by some to be also a valuable remedy for the bite of a rattlesnake.

Privet. (Ligustrum vulgare, Linn.) — Occasionally naturalized about settlements. Berries black. This is suited for low hedges.

1. Spice Bush. (Benzoin odoriferum, Nees.) — Known also as *Spice Wood*, *Wild Allspice*, and *Fever Bush*. Grows in damp woods throughout the State, and, wherever found, known under one or other of these names. It is a strongly scented shrub, smooth, 3 to 6 feet high, with dark red berries, and leaves 3 or 4 inches long. An infusion of the twigs is sometimes used in country fevers, and for sickly cattle in the Spring.

2. (B. melissæfolium, Nees.) — Belongs to the Lower and Middle Districts in low grounds and on the borders of shallow ponds, 2 or 3 feet high, leaves silky on both sides, 1 or 2 inches long, slightly heart-shaped; berries red. I am indebted to Dr. McRee and Prof. Mitchell for my knowledge of this species.

Pond Bush. (Tetranthera geniculata, Nees.) — Occupies small ponds in the Lower District, giving a gray smoky aspect to these localities. It is rarely met with in the lower part of the Middle District. It is 10 or 15 feet high, with smooth, zigzag branches, and small oval leaves, $\frac{1}{2}$ to 1 inch long, and red berries.

This and the genus next preceding are closely related to the *Sassafras*, and, like it, have small yellowish flowers which appear before the leaves.

Leather-wood. (Dirca palustris, Linn.)—Widely diffused over the country, but in this State occurring

sparingly upon shaded rivulets in the Middle and Upper Districts. It is 3 to 5 feet high, and the branches have such a tough and pliable bark that they make exeellent ligatures, for which they were used by the Indians, and from which the shrub derives its name. The fruit is a small reddish berry.

Carolina Buckthorn. (Frangula Caroliniana, Gray.)—A thornless shrub, 4 to 6 feet high, belonging to moderately fertile soils in the Middle and Lower Districts, but rare in the latter. The leaves are 3 or 4 inches long, 1 or 2 wide, dark green, smooth and shining, and ribbed with very straight parallel veins. The berry is blackish, of the size of a small pea.

1 Sumach. (Rhus copallina, Linn.)—Very common throughout the State, usually 6 to 10 feet high, sometimes a small tree 15 feet high, readily distinguished by its common leaf-stem being margined or winged between the leaflets. The crimson hairs on the berries possess a strong acid, (said to be Malic,) an infusion of which, with sugar, makes an agreeable cooling beverage, and, without sugar, is a very useful gargle for weak or sore throats.

2. Smooth Sumach. (R. glabra, Linn.)—This is 6 to 10 feet high, growing in the Middle and Upper Districts, and is remarkably smooth in all its parts. A milky juice issues from the wounded bark. The large clusters of red fruit are more compact than in No. 1, having an acid secretion as in that. The branches and leaves are astringent, and are used for tanning.

3. Staghorn Sumach. (R. typhina, Linn.)—Be-

longs to the Upper District, 10 to 20 feet high, the branches and flower stalks densely and rather softly hairy, somewhat like a Deer's horn "in the velvet." The leaflets are narrow and tapering. The bark issues a milky juice, and the berries are acid, as in No. 2. The wood is orange colored and aromatic. The bark and branches are used for tanning. The large clusters of purple fruit, and a fine foliage, render this species quite ornamental.

4. Dwarf Sumach. (R. pumila, Michx.)—This has a general resemblance to No. 3, especially in the dense hairiness of the young branches, but the leaflets in this are much shorter, broader and more coarsely toothed, and the plant is only 1 to 3 feet high, mostly spreading over the ground. It is rather rare, but occurs in the Lower and Middle Districts, especially in Mecklenburg, where it was originally discovered by the elder Michaux. Pursh has represented it as being very poisonous, but it is perfectly harmless, as are all the preceding species.

5. Poison Sumach. (R. venenata, DC.)—Found in all the Districts in cool swampy situations, where it is somewhat conspicuous by its smooth green bark and pink-colored leaf-stems. To most persons it is exceedingly poisonous, some even being affected by proximity to it, especially while rain or dew is evaporating from it. Others, however, can handle it with safety. The juice of this is a good varnish, like that of the *Japan Sumach* (R. vernicifera), which is a very similar and was once supposed to be the same species.

6. Poison Oak. (R. Toxicodendron, Linn.)—A small shrub, 1 to 2 feet high, well known by this name from the coast to the lower part of the Upper District. It is less poisonous than No. 5, but is too mischievous to be meddled with by persons who are sensitive to this class of poisons. The juice is an indelible ink upon linen.

It has been stated very positively in some quarters that the dreaded disease, known in our Mountains and at the West by the name of *Milk Sickness*, is caused by the cattle eating of this Poison Oak. But our Lower and Middle Districts abound in this plant, where this disease is not now heard of, while in those portions of the Mountains where cattle are affected with it, and which I have examined with special reference to ascertaining its origin, this plant is not found, nor any other poisonous plant which is not common elsewhere. Besides, it is well known that cattle do not take the disease if kept from those grounds till the dew has evaporated. Its cause is yet a mystery, but I am satisfied it is telluric.

The *Mountain Tea* or *Wintergreen*, (Gaultheria procumbens, Linn.) so well known in the Mountains, rarely in the other Districts, for its aromatic spicy leaves and berries, is an evergreen shrub, but so small that it would not generally be considered such.

The next two genera have a *fleshy fruit*, but too large to come under the class of Berries. They are well known by their names.

1. Papaw. (Asimina triloba, Dunal.)—Not un-

common in rich bottom lands of the Middle District, 10 to 15 feet high, but in the primitive soil of the Western States sometimes 30 feet. The flowers are dull dark-purple, over an inch wide. The fruit is about 3 inches long by 1½ thick, yellow, and filled with a soft sweet pulp which is edible, but does not seem to be agreeable to most persons. The bark of the trunk and root exhales a very heavy unpleasant odor. The wood is remarkably light and spongy.

2. Dwarf Papaw. (A. parviflora, Dunal.)—A small shrub similar to No. 1, but smaller every way, found in waste grounds in the Lower District, and in thin woods of the Middle and lower part of the Upper District. It is from 2 to 5 feet high, the leaves 4 to 6 inches long, (about half the size of the preceding,) the greenish-purple flowers ½ inch long and of unpleasant odor. Fruit in clusters, about an inch long.

1. Spanish Bayonet. (Yucca aloifolia, Linn.)—A native of the coast from North Carolina southward, frequently cultivated in the Lower District, and very showy when capped by its large cluster of white bell-shaped flowers. It is 4 to 8 feet high, its stiff leaves (12 or 18 inches long) tipped with a very sharp thorny point, and their edges very rough.

2. (Y. gloriosa, Linn.)—Found also on the sandy coast, similar to the preceding, but smaller, and the leaves smooth on the edges.

3. Bear Grass. (Y. filamentosa, Linn.)—Common in sandy fields nearly throughout the State, well

known by the thread-like filaments on the edges of the leaves, and admired for the beauty of its flowers, borne in clusters upon a naked stem 4 to 6 feet high.

The two next genera would be most generally ranked among *Stone-fruit*, though the shell of the second is very thin, and covered by a very thin flesh.

Fringe Tree. (Chionanthus Virginica, Linn.)—Sometimes called *Old Man's Beard*. We have no shrub of softer and more delicate beauty than this, when draped in its clusters of snow-white, fringe-like flowers. It is found northward to southern Pennsylvania. In this State it grows in all the Districts, but most abundantly in the Middle. It is sometimes 15 to 20 feet high, but flowers at the height of 2 or 3 feet. Its fruit has the appearance and odor of a green plum, but I have never seen it produce fruit in the Lower District. An infusion of the roots is a favorite remedy in long standing intermittents and other chronic diseases.

Oil-nut. Buffalo Tree. (Pyrularia oleifera, Gray.)—A bush 3 to 6 feet high abundant through our mountain range, and reaching north to the mountains of Pennsylvania. The leaves are 3 to 4 inches long, becoming smooth, rather acrid to the taste, and oily. The fruit is an inch or more long, pear-shaped or roundish, with a thin shell and large oily kernel. The root has an unpleasant odor.

The remaining Shrubs, including those with Nuts, are *Dry-fruited* and very various. The first Group will include such as have dry seed-covers, containing

small seeds and opening by partitions. The first three genera have tubular small flowers like those of the Huckleberry and Sorrel Tree.

1. Fetter-Bush. (Andromeda nitida, Bartr.)—Found only in the Lower District in low Pine barrens. It is 2 to 5 feet high, with the branches three-angled, smooth throughout; the leaves evergreen and shining and rather thick, 1 to 2 inches long, not toothed; the flowers clustered in the forks of the leaves, white or reddish, with a sort of honey odor, opening in March and April.

2. Stagger-Bush. (A. Mariana, Linn.)—Grows in the Lower and Middle Districts, on the margin of low grounds. It is 2 to 3 feet high and smooth. The leaves are 1 to 2 inches long, not toothed, dull green; the flowering branches generally destitute of leaves; the flowers in clusters along the branches, near ½ inch long, white and showy, opening in April and May.

3. (A. speciosa, Michx.)—A very handsome shrub growing in low wet grounds of Pine barrens in the Lower District, 2 to 5 feet high and smooth. The leaves are 1 to 1½ inch long, toothed, dull green, sometimes covered on the underside with a very white bloom. The flowering branches are free from leaves, 6 to 12 inches long and very showy. The flowers are larger than in No. 2, more bell-shaped, opening in May.

4. Pepper-Bush. (A. ligustrina, Muhl.)—This occurs in all the Districts, but only in the lower part

of the Upper. It is 3 to 4 feet high, somewhat hairy. The leaves are about 2 inches long, sharp pointed, finely toothed, paler underside. The flowers are small, almost globular, scurfy, in small clusters that are leafy.

5. (A. floribunda, Pursh.)—Rather rare, and belonging to the mountains, 4 to 8 feet high, the younger branches reddish and covered with scattered stiff hairs and glandular dots. The leaves are 1 to 1½ inch long, evergreen and rigid, rounded at base, sharp at top, minutely scalloped, the youngest with short hairs on the margin; flowers in crowded leafy clusters.

1. Dog Laurel. (Leucothœ Catesbæi, Gray.)—Found only in the mountains, where it is also called *Hemlock*, growing on the cool margins of streams. It is 2 to 4 feet high, the leaves evergreen, 3 to 5 inches long and 1 inch broad, with a long tapering point, prickly-toothed on the edges. Clusters of flowers in the forks of the leaves. A very pretty shrub.

2. (L. axillaris, Don.)—On the borders of streams and wet places in the Lower District, and very much like No. 1. But the leaves are less prickly-toothed, less tapering, 2 to 3 inches long, broader than in the preceding, the clusters of flowers longer, and the flowers longer.

3. (L. racemosa, Gray.)—Grows from the coast to the base of the mountains, 4 to 8 feet high, on the borders of wet places. The leaves are rather thin, acute, finely toothed, 1 to 1½ inch long. The flowers

($\frac{1}{2}$ inch long) are on terminal straight branchlets, all hanging to one side, and looking like rows of teeth, the rows being 2 or 3 inches long.

4. (L. recurva, Gray.)—Discovered by Mr. Buckley in the mountains near Paint Rock. It is 3 to 4 feet high, the leaf and flower-branches recurved; the leaves broader and more hairy than in No. 3, rounded at base, finely toothed, scarcely tapering, 2 to 3 inches long, deciduous as in No. 3.

(Cassandra calyculata, Don.)—A small shrub, 2 to 3 feet high, growing in damp grounds of the Lower District, and not unlikely in the others. The evergreen leaves are about 1 inch long, $\frac{1}{3}$ inch wide, finely toothed, rather stiff, and covered, like the young branches, with small white scales. The flowers are on terminal branchlets, quite small, solitary in the forks of small leaves.

1. LAUREL. (Rhododendron maximum, Linn.)—This is rare north of Pennsylvania, but becomes abundant southward in the Alleghanies, and is common through their whole range in this State, where it often forms impenetrable thickets, many acres in extent. It also grows upon rocky hills in the Middle District as far east as Orange. Its usual height is 8 to 10 feet, but is sometimes as high as 20 feet. This is a production of great beauty and universally admired. The flowers, about an inch broad, grow in compact clusters on the ends of the branches, and are generally of a pale rose color, but sometimes whitish, dotted with green and yellow on the inside. These

contrast pleasingly with the large thick evergreen leaves. The leaves and flowers are reputed poisonous. The wood is very hard and fine grained, but not equal to that of Ivy.

2. Oval-Leaved Laurel. (R. Catawbiense, Michx.)—This splendid Laurel is chiefly confined to the highest summits of our mountains, but is said to extend somewhat into Virginia. It is often confounded with the preceding, but besides its different locality, growing only on the tops of such mountains as the Roan in Yancey and Negro Mountain in Ashe, it blossoms earlier than the other, though at a higher elevation, has larger and more intensely colored flowers, and shorter and broader leaves. It is 6 to 8 feet high, and handsomer than No. 1. It stands cultivation pretty well in the Middle District.

3. Dwarf Laurel. (R. punctatum, Andr.)—A rusty looking shrub, 1 to 2 feet high, chiefly confined to the mountains of North Carolina and Georgia. It has a strong family likeness to the other species, but is too inferior to them in every respect to attract or deserve much attention. I have met with it only on Table Rock, Jonas' Ridge and Whiteside Mountain.

1. Smooth Honeysuckle. (Azalea arborescens, Pursh.)—Found only along water courses in the lower part of the Upper District, and is 4 to 10 feet high. It is similar to the next, a common and well known species; but this has smooth branchlets, leaves of brighter green above, and long calyx appendages at the base of the flower. The flowers are

white and roseate, and their odor may be perceived at a great distance; this being the most powerfully fragrant of our Honeysuckles. For cultivation this will rank next in beauty to the *Yellow Honeysuckle.*

2. CLAMMY HONEYSUCKLE. (A. viscosa, Linn.) —Very common through the State, 2 to 6 or 8 feet high, the branchlets bristly, and the flowers covered with clammy hairs. The flowers are white or flesh-colored and very fragrant. In this and No. 1 the flowers appear after the leaves have expanded. In the next two species they appear before or with the leaves.

A variety of this (var: glauca) occurs with paler and rougher leaves, their underside covered with a white bloom.

3. PURPLE HONEYSUCKLE. (A. nudiflora, Linn.) —Very common in great varieties of soil through the State, 2 to 6 feet high, but usually very small in poor dry soils. The flowers vary from a flesh-color to pink or purple, and are sometimes quite white. They are destitute of fragrance.

4. YELLOW HONEYSUCKLE. (A. calendulacea, Michx.)—This is found only at a considerable elevation on our mountains, where it is abundant and well known by the name here given. It is commonly from 3 to 6 feet high, and varies very much in the color of its flowers, but most frequently they are some shade of yellow. Bartram, in his "Travels," calls this the *Fiery Azalea*, and says: "This epithet *Fiery* I annex to this most celebrated species of

Azalea, as being expressive of the appearance of its flowers, which are in general of the color of the finest red lead, orange and bright gold, as well as yellow and cream color. These various splendid colors are not only in separate plants, but frequently all the varieties and shades are seen in separate branches on the same plant, and the clusters of blossoms cover the shrubs in such incredible profusion on the hillsides, that suddenly opening to view from dark shades, we are alarmed with the apprehension of the woods being set on fire. This is certainly the most gay and brilliant flowering shrub yet known."

1. IVY. (Kalmia latifolia, Linn.)—A beautiful shrub known from New England to Georgia, either by the above name, or as *Laurel*, *Mountain Laurel* and *Calico Bush*. In this State it is known under the first and last names, the first being most in use. It is most abundant in the mountains, but is found along streams and on rocky hills of the Middle District, extending somewhat into the Lower, even into the Dismal Swamp. This, in combination with the *Laurel*, which often accompanies it and blossoms at the same time, presents a scene of floral beauty rarely equaled in this country. Like the Laurel, this is an evergreen, and forms also impenetrable thickets, but its leaves are shining, much darker and smaller. It is 10 to 15 and even 20 feet high.

The leaves are poisonous to cattle, and a snuff made from them is a powerful sternutatory. An ointment made from the powdered leaves has been

successfully used for scald heads. The wood, particularly of the roots, is exceedingly hard, fine-grained, marked with red lines, and capable of a good polish. We have hardly any wood better adapted for the handles of tools, small screws, and similar articles. This and the Laurels can be raised from seeds.

2. WICKY. (K. angustifolia, Linn.)—This has an extensive range over the United States. In this State it is common on the small Pine-barren swamps of the Lower Districts, but is rare in the others. It is 1 to 3 feet high; the leaves are 1 to 2 inches long and ½ inch wide, pale green, paler underneath; the flowers roseate or crimson, about ½ inch broad, being one-third the size of the preceding, but of the same elegant form, and growing in clusters along the branches. This is a beautiful undershrub and is greatly improved by cultivation. It is a poisonous plant, especially to sheep, and is in some places called *Sheep Laurel*. A decoction of the leaves is a domestic remedy for cutaneous diseases in man and beast.

3. (K. cuneata, Michx.)—Similar to the *Wicky*, found in the Lower District, but very rare. It may be distinguished from that by the flowers being white at top and red at bottom, and by the leaves being scattered along the branches, instead of growing in circles of three, as in No. 2.

SAND MYRTLE. (Leiophyllum buxifolium, Ell.)—A small evergreen shrub, 6 to 12 inches high, looking somewhat like the Garden *Box*, with small,

dark green leaves, and small white flowers clustered on the ends of the branches. It grows in sandy woods of Brunswick County, and on the rocky summits of our mountains, from the Grandfather to Whiteside.

False Heath. (Menziesia globularis, Salisb.)—Common on the higher mountains, 3 to 6 feet high, with thin, hairy, deciduous leaves, and small, reddish, bell-shaped flowers, like those of a *Huckleberry*, and a small, woody seed-vessel, like those of *Andromeda*, etc.

1. White Alder. Sweet Pepper-Bush. (Clethra alnifolia, Linn.)—Grows near damp places in the Lower and Middle Districts, 2 to 4 feet high. The leaves are a little like those of the common *Alder*, but are smaller and narrower. The flowers are small, white, and very fragrant, terminating the branches in racemes which are 2 to 3 inches long. A form of this (var: tomentosa) has leaves with a white down on the underside.

2. Mountain Pepper-Bush. (C. acuminata, Michx.)—Quite an ornamental shrub, 10 to 15 feet high, growing in the mountains from Ashe to Cherokee. Its leaves are thin, pointed, fine-toothed, and 5 to 6 inches long. The racemes of white flowers are larger than in No. 1, and drooping.

(Itea Virginica, Linn.)—At a little distance this has some resemblance to the *White Alder*, but with a smoother aspect, and the flowers are not fragrant. It belongs to the borders of wet places from the

coast to Lincoln, is 4 to 8 feet high, and has small white flowers in drooping racemes, which are 3 to 5 inches long on the ends of the branches.

1. Wild Hydrangea. (Hydrangea arborescens, Linn.)—A smooth shrub, 2 to 5 feet high, growing along streams and on mountain and hill sides of the Upper and Middle Districts. The leaves are 3 to 5 inches long, heart-shaped, pointed, toothed. The flowers are whitish, in flat-topped clusters, some of those on the margin being large and showy like those of the cultivated Hydrangea.

2. Snowy Hydrangea. (H. radiata, Walt.) — Found only on the mountains west of the Blue Ridge from Yancey to Georgia. North of this it has not, I think, been detected. It is from 3 to 6 or 8 feet high. The leaves are heart-shaped, 4 to 6 inches long, the underside clothed with a thick, silvery-white down. The barren flowers, which give this genus the peculiarity for which it is admired, are in this species found only around the border of the flat-topped cluster, but are said to become much more abundant in cultivation. They are of a pure white, an inch or more broad. This pretty shrub would be much prized in gardens, if there were not some more showy species in cultivation.

1. Syringa. (Philadelphus grandiflorus, Willd.) —This very ornamental shrub, now common in our yards and gardens, prized for its graceful, slender branches and snow-white flowers, does not appear to be abundant in this State. I am acquainted with

but a single locality of it, which is in Hickory Nut Gap; though it is doubtless to be found along other streams in the upper part of the State. It is 6 to 10 feet high, the leaves about 2 inches long, pointed, with few distant teeth, rather soft and hairy, and tasting somewhat like Cucumbers. The flowers are an inch or more broad.

2. Rough Syringa. (P. hirsutus, Nutt.)—Every way smaller than No. 1, the leaves quite rough on the upper side and whitish-downy beneath. This grows on the French Broad River, a few miles below Asheville.

1. Mock Orange. (Styrax grandifolia, Ait.)—A very beautiful shrub, 3 to 12 feet high, with rather large leaves, 3 to 6 inches long, and of a grayish aspect from the presence of a whitish down on their underside. The flowers are from 15 to 20 on loose nodding racemes, white, very fragrant, in size and form very similar to those of the Orange. It grows on light rich soils in the Lower and Middle Districts, as far west as Lincoln. This is well worthy of a place in shrubberies, but has received but little attention.

2. (S. Americana, Lam.)—Distinguished from No. 1 by its smooth, green leaves, 1 or 2 inches long, and smaller flowers, only 3 or 4 on a raceme. It is 4 to 8 feet high, not inelegant, but of inferior beauty to the other, and grows on the borders of swamps in the Lower District.

1. Bush Honeysuckle. (Diervilla trifida,

Mænch.)—A small, rather delicate shrub, 3 to 5 feet high, with pointed toothed leaves which are 3 or 4 inches long, and have short foot-stalks. The flowers are in clusters of (generally) 3 in the forks of the upper leaves, greenish yellow, and funnel-shaped, like those of the *Woodbine*. This is found only in the mountains.

2. (D. sessilifolia, Buckley.)—Like the preceding, but larger in several particulars, and the leaves clasp the branches, being destitute of a foot-stalk. Found in the mountains.

1. Strawberry Bush. (Euonymus Americanus, Linn.) — A shrub 2 to 5 feet high, found in all the Districts, and known by the names of *Burning Bush*, *Fish-wood*, and *Bursting Heart*, besides the one first given. The branches are square, straight but flexible, very smooth, and about as green as the leaves. The flowers are small, purplish or greenish, and unattractive. The fruit gives the plant a peculiar beauty, for which chiefly it is prized in shrubberies. This is of a bright crimson color when mature, and covered with small warts which give it somewhat the aspect of a small strawberry. This finally bursts open, exposing its bright scarlet seeds.

2. Burning Bush. (E. atropurpureus, Jacq.) — Every way larger than the preceding, its flowers dark purple, and the fruit smooth. I have not met with it, and am indebted to Prof. Mitchell for my knowledge of it as an inhabitant of this State.

(Stillingia ligustrina, Michx.)—A shrub with slen-

der spreading branches, 6 to 12 feet high, very rare in this State, and not found, I think, north of Cape Fear River. The leaves are 1 to 3 inches long, not toothed, the upper end obtuse, tapering at the lower end, and with a short foot-stalk. For my knowledge of this plant I am under obligations to Dr. McRee. The *Tallow Tree* (S. sebifera), cultivated farther south, and the *Queen's Delight* (S. sylvatica), an herbaceous plant of the Pine barrens, are members of this genus.

1. (Stuartia Virginica, Cav.) — This and the *Loblolly Bay* are the only representatives in this country of the admired *Camellia* family, and the still more important *Tea Plant* It is one of our most beautiful shrubs, and yet has nowhere, so far as I know, obtained a popular name. It is found in rich soils in the eastern half of our Lower District, extending north into Lower Virginia, and southward to Florida. It is 6 to 15 feet high, blossoming in April and May. The flowers are white, about the size of the Cherokee Rose, silky on the outer side, covered on the inner with a circle of stamens with bright purple filaments and blue anthers.

2. (S. pentagyna, L'Her.) — Like the preceding, without a name. It is similar to the preceding, only its flowers are cream-colored and its staminate filaments are white. Found in the Middle and Upper Districts, from Wake to Cherokee. The seed-vessel in these two is an ovoid woody capsule.

Toothache Tree. (Zanthoxylum Carolinianum,

Lam.)—Known also by the names of *Pellitory* and *Prickly Ash*. The last name, though more legitimate in this application, is generally appropriated in this State to another plant before described. It is a small branching tree, 12 to 20 feet high, the old bark covered with prickles, and peculiar to the southern sea-coast. The bark, leaves, and fruit are aromatic and intensely pungent, producing a rapid secretion of saliva, and are a popular and useful application for toothache. They would probably be generally serviceable as a counter irritant.

1. HARDHACK. (Spiræa tomentosa, Linn.) — An erect branching pretty shrub, 2 or 3 feet high, common in low wet places of the Lower and Middle Districts, and the lower part of the Upper. The leaves are 1 to 1½ inch long, oblong, coarse-toothed, the under side coated with a rusty-white down. The flowers are rose-colored, small, clustered on the ends of the branches in a compound raceme 3 or 4 inches long.

2. QUEEN OF THE MEADOW. (S. salicifolia, Linn.) — This is similar to No. 1, and sometimes called *Meadow Sweet*, but is taller and the flowers generally white. The leaves are larger, smoother and thinner. It belongs to damp bushy places in the Middle District, and in valleys and along streams in the lower part of the Upper.

3. NINE BARK. (S. opulifolia, Linn.) — This is found upon river banks in the western part of the State, 6 to 10 feet high, with slender curved branches,

often spreading like a vine over other shrubs, and covered with a profusion of flat clusters of small, white, but not showy flowers. Leaves about 2 inches long and broad, divided into 3 segments, and coarsely toothed. The reddish fruit is membranaceous, composed of 3 to 5 sacs united at base. The old bark peels off in thin layers.

YELLOW ROOT. (Zanthorhiza apiifolia, L'Her.)—A small shrubby plant, 1 or 2 feet high, generally spreading on the ground, found on moist rocky hillsides of the Middle and Upper Districts. The leaves are dark green and divided somewhat like those of Parsley. The flowers are small, dark purple, in loose slender clusters, appearing before the leaves. The roots are intensely bitter, of a yellow color, and were used by the Indians in making a yellow dye.

RED ROOT. (Ceanothus Americanus, Linn.)—Common in dry woods from the coast to the mountains, 1 to 3 feet high, and the ends of the numerous small branches having loose clusters (1 or 2 inches long) of small white flowers supported on white footstalks. The leaves are 1 or 2 inches long, sharply toothed, and have 3 prominent veins. The root is dark red and quite astringent, and is frequently used in infusion, tincture, or powder, where astringency is required. It is said also to furnish a dye of a cinnamon color. The dried leaves served as a substitute for Tea during the Revolution, and hence got the name of *New Jersey Tea*. It is said to be quite as good as some of the Black Teas.

1. Indigo Bush. (Amorpha fruticosa, Linn.) — A very pretty shrub, 6 to 15 feet high, growing upon streams in all the Districts, but more frequent in the Lower. The flowers are small, dark purple, crowded on spikes which are 3 or 4 inches long and clustered together. It is said to have been used for the manufacture of Indigo, but, I imagine, with not much profit.

2. Dwarf Indigo Bush. (A. herbacea, Walt.)— Like No. 1 in its whole habit, but only 2 or 3 feet high, of a grayish aspect, and with the flowers whitish or pale-blue. It is frequent in the barrens of the Lower District. The leaves in these two species are *pinnate*, like those of the Locust and Hickory. The fruit is a very small pod, sprinkled with glands.

He Huckleberry. (Cyrilla racemiflora, Walt.) —This is an absurd name, but I have never heard any other. This smooth shrub inhabits the borders of swamps and branches in the Lower District, and is 10 to 15 feet high. The leaves are oblong, shining, 2 to 3 inches long. The small white flowers grow on racemes that are 3 to 5 inches long, and that are clustered on the ends of the previous year's growth, and make this quite ornamental. The bark at the base of the trunk pulverizes naturally, and is much used as a styptic and in applications to old ulcers.

(Buckleya distichophylla, Torr.)—A smooth shrub, about 6 feet high, with slender grayish branches, known only upon the streams of this State that flow westward, as the Pigeon and French Broad Rivers.

Its thin delicate foliage reminds one by its general aspect of the English and Catalonian Jasmine of our gardens. The flowers are greenish and inconspicuous. The fruit is about ½ inch long, growing solitary on the end of a branch.

(Darbya umbellulata, Gray.)—Like the preceding, a very rare plant, as yet known only in two or three localities in Georgia, and in the bend of the Catawba, near Lincolnton, in this State. It is 1 to 2 feet high, with opposite branches and leaves, the latter ovate, acute, entire, 1 to 2 inches long, 1 to 1½ wide, rounded at base, and with short foot-stalks. The flowers are small, greenish, in a cluster of 3 to 8, which is borne on a foot-stalk in the forks of the leaves.

Witch Hazel. (Hamamelis Virginica, Linn.)—Well known by this name through the State. It has the peculiarity of flowering late in the Fall after the leaves have dropped, and maturing its fruit in the following Spring. Its popular name is derived from the use made of its branches in discovering hidden springs of water, minerals, etc. Other kinds, as of the Peach, are indeed sometimes used for this purpose, but I venture to affirm that none in the whole vegetable kingdom are better than those of *Witch Hazel.*

Dwarf Alder. (Fothergilla alnifolia, Linn.)—Unknown north of Virginia. In this State it is found from the coast to Lincoln. In the Lower District it is 1 to 2 feet high, often but a single unbranched stem, terminated by a tuft of small white flowers before the leaves appear. It grows here upon

the borders of Pine-barren swamps, and is rarely much branched. In the Middle District it is found upon rocky hills, is 3 to 5 feet high, forming a branched straggling shrub. The foliage varies a good deal, so that several species have been made of it by some authors; but the leaves are generally not unlike those of *Alder*. The fruit is a hard capsule, like that of *Witch Hazel*, and, like that, bursting elastically and expelling the hard bony seeds to a considerable distance.

Sweet Fern. (Comptonia asplenifolia, Ait.) — A small shrubby plant, 1 or 2 feet high, with leaves (3 or 4 inches long) much resembling some of the Ferns, and possessing a grateful aromatic odor like that of the *Wax Myrtle*. It is found chiefly on rocky or gravelly hills of the Upper and Middle Districts, but is occasionally found in dry and sandy woods in the upper part of the Lower. An infusion of this plant is a popular remedy for dysentery.

Wax Myrtle. Candle-berry Myrtle. (Myrica cerifera, Linn.) — A well-known shrub with fragrant leaves, common in the Lower District, and found in fruit from 1 to 18 feet in height. The small berry-like nuts, which often hang two or three years on the branches, are covered with a fragrant wax which has been used in the manufacture of soap and candles. The latter burn long and diffuse an agreeable odor. A decoction of the berries has been used for tetters and similar affections. The root is said to be a specific for tooth-ache.

1. Hazel Nut. (Corylus Americana, Walt.) — A shrub 4 to 8 feet high, found in our mountains, and extending north to New England. The nut is much esteemed, but is smaller and harder shelled than the European Hazel or *Filbert* (C. Avellana).

2. Beaked Hazel Nut. (C. rostrata, Ait.) — Of similar size and range with the preceding; but this has the husk of the fruit prolonged into a beak or horn, and it extends into the Middle District as far down as Orange.

The remaining shrubs are so various in their fruit and general habit, that, to save space, they are here grouped miscellaneously together, most of them being well known by their popular names.

Button Bush. Box. (Cephalanthus occidentalis, Linn.)—Common on the borders of streams and swampy grounds in the Lower and Middle Districts, always easily recognized by its round head of small white flowers, which is about an inch in diameter. It is 3 to 4 feet high, and very pretty when in blossom. The inner bark of the roots is an agreeable bitter, and is used for relieving obstinate coughs.

1. Shrubby Trefoil. Hop Tree. (Ptelea trifoliata, Linn.)—A shrub 4 to 8 feet high, belonging to the upper part of the Middle District, with trifoliate leaves like those of Clover, the leaflets 2 to 3 inches long, somewhat hairy when young, pale on the underside. The flowers are small, greenish-white, in rather flat clusters, heavy-scented, which are succeeded by a flat, winged fruit, like that of the Elm,

but an inch broad. The fruit is bitter, and used as a substitute for *Hops*.

2. Downy Hop Tree. (P. mollis, M. A. C.)—Every way smaller than No. 1, and found only in the Lower District. Its leaves are more rigid, and the underside covered with a permanent, white, soft, silky down.

Bladder Nut. (Staphylea trifolia, Linn.)—An interesting shrub, 5 to 10 feet high, with greenish, striped branches, trifoliate leaves, the leaflets 2 to 4 inches long, taper-pointed, finely toothed, and smooth. The small white flowers are gathered into loose pendulous clusters, which are succeeded by 3-angled bladder-like pods about two inches long. I have met with this only near Hillsborough and Chapel Hill, but it is probably to be found along streams through the Middle District.

1. Sweet Shrub. (Calycanthus floridus, Linn.)—This plant, now so extensively cultivated, and admired for the rich Strawberry odor of its flowers, is a native of the southern Alleghanies. This species may be known by the soft down on the underside of the leaves, and on the branchlets, etc. The fruit of this genus is a sort of thick-skinned, bladdery sac, 1½ inch long, containing large seeds.

2. (C. lævigatus, Willd.)—The leaves of this are taper-pointed, smooth and green on both sides, sometimes a little rough above and pale beneath. This is found in the mountains, and in the Middle District as low down as Orange.

3. (C. glaucus, Willd.)—This is found from Lincoln westward, and may be recognized by the white under-surface of the leaf: a little rough on the upper.

1. ALDER. (Alnus serrulata, Ait.—Common on small streams all over the State, and too well known by the above name to need a description.

2. MOUNTAIN ALDER. (A. viridis, DC.)—Like the above in habit and general characters, but the underside of the leaves covered with a soft gray down. It is known at the South, only upon the top of Roan Mountain, from whence to northern New York it is not found. It occurs in Europe.

1. GROUNDSEL. (Baccharis halimifolia, Linn.)—Grows in both brackish and fresh swampy grounds of the Lower District. It is 6 to 12 feet high, of an ashy hue from the whitish scales that cover the bark and leaves. The small flower-heads are solitary, or a few clustered together, borne on a foot-stalk. The long, white, silky hairs of the seeds emerging from the heads give the plant a pleasing appearance in the Fall.

2. (B. glomeruliflora, Pers.)—Like the preceding, but rarer and less showy, and has larger clusters of flower-heads, destitute of the foot-stalk.

3. (B. angustifolia, Michx.)—Found in brackish marshes, 4 to 8 feet high. The leaves, which in the other species are half as broad as long, and toothed, are in this linear and entire.

1. MARSH ELDER. (Iva frutescens, Linn.)—A

coarse unsightly shrub of our salt marshes, 4 to 6 feet high. The whole plant is smoothish, and its leaves lance-shaped, toothed, and about 2 inches long. The flower-heads are greenish and unsightly in the forks of the small leaves on the terminal branchlets.

2. (I. imbricata, Walt.) — This grows upon the sea-beach, and is but partly shrubby, 3 or 4 feet high. The leaves are very thick and fleshy, 1 to 1½ inch long, rarely toothed, and wedge-shaped. The plant has a strong odor like old honey.

Swamp Loosestrife. (Nesæa verticillata, H. B. K.)—A half shrubby plant found in branch swamps of the Lower District, 4 to 6 feet high, with slender, curved, 4 to 6-sided stems. The leaves are 3 or 4 inches long, narrow like those of a Willow, generally growing around the stem in a circle of three. The flowers are clustered in the forks of the leaves, about ½ inch wide, purple or roseate, very pretty, reminding one of the blossoms of the Lagerstræmia or Crape Tree.

Arbor Vitæ. (Thuja occidentalis, Linn.) — This has its southern limit on the mountains in the northwestern part of the State. From thence through the mountains of Virginia it becomes more common. It is but a shrub or small tree at the South, but farther north it attains a height of 50 feet, and its timber is used in building and for cabinet work.

1. Cane. (Arundinaria gigantea, Chapm.)—This belongs to the *Grass* family, but, being of woody texture, falls within our arrangement. It is 10 to 15

or 20 feet high, found along the river bottoms of the Cape Fear. I am not aware of its existence north of that limit. According to Dr. Chapman, "it is simple the first year, branching the second, afterwards at indefinite periods fruiting, and soon after decaying." The value of the stems for fishing-rods is well known.

2. REED. (A. tecta, Muhl.)—This is the common smaller form, 2 to 10 feet high, and found in low grounds in each District.

This completes the list of the SHRUBS of North Carolina, so far as they are known to me, with the exception of the following, which are too small and obscure to merit more than a bare enumeration.

HYPERICUM. Of this we have five woody species, all with yellow flowers, one of which (H. prolificum) is occasionally cultivated under the name of *Rock Rose*.

ASCYRUM. Much like the preceding, also with yellow flowers.

FLOWERING MOSS. (Pyxidanthera barbulata, Michx.)—A very pretty, small, trailing evergreen, with white flowers which appear in early Spring, and looking somewhat like a Moss in the absence of blossoms. Belongs to the damp Pine-barrens and Savannas of the Lower District.

HUDSONIA. Only 3 or 4 inches high, also with yellow flowers, of which no locality is anywhere known but on Table Rock, N. C.

TRAILING ARBUTUS, or GROUND LAUREL. (Epigæa repens, Linn.) Common.

POLYGONELLA. In the sandy Barrens about Wilmington.

It may be interesting to append here a comparative view of the Flora of North Carolina with that of the Northern and Southern States east of the Mississippi. In Prof. Gray's "Manual of Botany," which includes the States north of North Carolina and Tennessee, I find described 130 Trees, 183 Shrubs, and 30 Vines. In Dr. Chapman's "Flora of the Southern States" are described 126 Trees, (of which there are 112 in North Carolina,) 224 Shrubs, (176 of them in North Carolina,) and 46 Vines (32 in this State).

THE

Vines of North Carolina.

These will be grouped according to the character of their fruit: the first nine genera having *Berries;* the next five, *Pods;* the next three, *dry Capsules;* and the remaining two, naked *Feathered Seeds.*

GRAPES.—1. Summer Grape. [Vitis æstivalis, Michx.]—Common, as are the other species, excepting the *Muscadine*, in most parts of the United States. In this State it is found in all the Districts, generally near streams, but sometimes in dry woods, climbing over trees from 30 to 50 feet. The leaves are 4 to 6 inches broad, cut into 3 or 5 divisions, the underside clothed with a reddish, cobweb-like down when young, which mostly falls away in the course of the season. The bunches of fruit are compound, 6 to 8 inches long, the berries $\frac{1}{3}$ to $\frac{1}{2}$ inch thick, purplish, blackish or bluish, with a bloom; very varying in flavor, frequently very fine.

According to H. W. Ravenel, Esq., of Aiken, South Carolina, who is a good Botanist, as well as a successful cultivator of Grapes, the following cultivated varieties are descended from this species: The *War-*

ren, *Pauline*, *Herbemont*, *Guignard*, *Clinton*, *Ohio*, *Marion*, *Treveling*, *Long Grape* or *Old House*, *Elsinborough*, *Seabrook*, and *Lenoir*. With this last he identifies the *Black July*, *Devereux*, *Thurmond*, *Sumter*, and *Lincoln* Grapes. I find, however, that there is a difference of opinion in regard to the identity of the Lenoir and Lincoln varieties; some maintaining a perceptible difference. the latter being deemed superior to the other. Dr. C. L. Hunter, of Lincoln, who is paying much attention to Grape culture, especially of our native varieties, pronounces the *Lenoir* "one of the very best table Grapes," and recommends its general cultivation. He informs me that this, as well as the *Warren*, came from Georgia.

I learn from the same gentleman that the Lincoln Grape was discovered about the beginning of this century, near the junction of the South Fork and Catawba, by Dr. Wm. McLean, and that he transplanted the whole vine near his house. From this stock Mr. John Hart, of Mecklenburg, derived his, which is still in vigorous existence. From this last, Dr. Butt, of Lincolnton, obtained his cuttings, and sent some of the fruit to Longworth, who gave it the name, now most in use, of the *Lincoln* Grape, though it was previously known as the *Hart* Grape, and *McLean* Grape.

2. Fox Grape. (V. Labrusca, Linn.)—I have met with this only in the Middle District, where it is found in damp thickets, running from 15 to 25 or 30 feet. The leaves are roundish, about the same size

as those of No. 1, but not so much divided, and covered underneath with a permanent thick down, which is generally white or gray, rarely of a faint rusty hue. The berries are larger than in that, being ½ to ¾ inch in diameter, in small bunches, commonly dark purple, but sometimes amber-colored or whitish, and of various quality, mostly with a musky and rather hard pulp.

The cultivated varieties of this are, according to Mr. Ravenel, the *Isabella*, *Catawba*, *Bland's Madeira*, *Concord*, *Diana*, *Rebecca*, *To Kalon*, *Anna*, *Mary Isabel*, *Ontario*, *Northern Muscadine*, *Hartford Prolific*, *Catawissa*, *Garrigues*, *Stetson's Seedling*, *York Madeira*, *Hyde's Eliza*, *Union Village*, *Early Chocolate*, *Harvard*, *Early Black*, *Green Prolific Kilvington*. The first two in the list are, I believe, the most approved, and most extensively cultivated; both of which are said to have originated in this State.

A foreign origin has been claimed for the Isabella, but this is an evident error, proved in the fact that seedlings of the Isabella sometimes revert to our Fox Grape in every particular of leaf and fruit. This has been tested by Mr. Caradeuc, of South Carolina, as I learn from Mr. Ravenel. But what is regarded as a scientific demonstration of its American origin, is the fact that its seedlings sometimes have barren stocks, like all our American species, which is not the case with any European Grapes. Besides, the Isabella, in its specific characters, comes nearer to our Fox Grape than to any other.

Dr. Hunter, who has given much attention to the history of our Grapes, has communicated most of the following items in regard to the Isabella. Dr. Laspeyre was probably its first cultivator in the United States, probably as early as 1805, as he sold it in the Wilmington Market in 1810. Judge Ruffin cultivated it in Orange County in 1811, under the name of *Laspeyre Grape*. It is a tradition that Gov. Smith brought it to Smithville in 1809. About the year 1810 Mrs. Isabella Gibbs took a rooted cutting from Gov. Smith's garden to Brooklyn, New York, according to a current account. According to Dr. Laspeyre, she got the vine from *him*. These statements may, in a sort, be reconciled, if Gov. Smith obtained *his* stock from Dr. Laspeyre. In 1819, Gen. Swift bought the Gibbs place, and it was there the elder Prince first saw and obtained this Grape, which he named the *Isabella* in compliment to Mrs. Gibbs. Dr. Hunter has some of these statements from Gen. Swift. Dr. Laspeyre was under the impression that this, which he called the *Black Cape*, was one of the vines which he brought from St. Domingo, but it was probably the accidental introduction of an American among his foreign stocks. Dr. Hunter seems to be of opinion that it came to the Cape Fear region from South Carolina, according with the tradition mentioned in Dr. Hawks's History.

The *Catawba Grape*, as I am informed by Dr. Hunter, originated in Buncombe County on Cain Creek, an affluent of the French Broad. His views

on "The Origin of the Catawba Grape" were given last year (1859) in an article for the American Farmer.

3. MUSCADINE. (V. vulpina, Linn.) Known also as *Bullace*, *Bull Grape*, and *Bullet Grape*, and farther south as *Fox Grape;* in Florida, as *Mustang Grape*. It extends northward as far as Maryland and Kentucky, from whence southward it is one of the most common vines. In this State it is found, in various soils, from the coast to Cherokee, but most luxuriant in light soils of the Lower District, covering the loftiest trees. The bark is pale and smooth, that of the smaller branches dotted with minute warts. The leaves are about 3 inches long, thin, smooth and shining, coarse-toothed, and nearly round and heart-shaped. The berries are in small bunches, larger and thicker skinned than any of our other Grapes, varying in color from whitish through different shades of red and purple to ebony black. The quality of the fruit varies as much as its color, being now of a sharp acid flavor, and again of luscious sweetness.

The *Scuppernong*, now so famous as a Table and Wine Grape, is a variety of this species. There are still found in the Lower and Middle Districts, especially in the former, wild vines bearing a whitish or amber berry, like the original *Scuppernong*, but of various qualities, as in the case with the colored kinds. Some of them are no better than the commonest *Muscadines;* and no one is superior, if equal,

to the well known cultivated variety. Some of the dark Muscadines are very nearly as luscious as the *Scuppernong*, and have been brought under culture, as the *Mish Grape*, and *Alexander's Grape*, which are black, and also the *Bull's Eye*, so named from its superior size.

The *Hickman Grape* I take to be identical with the true Scuppernong and derived from Tyrrell County, the home of the original. For some of this information, as well as for the following history of the *Scuppernong* (proper), I am indebted to Rev. E. M. Forbes, who has resided in the region and has taken much pains to obtain an authentic account of this vine. Two men, of the name of Alexander, while clearing land near Columbia, the county seat of Tyrrell, which stands on the east side of Scuppernong River, discovered this Grape, and were so much pleased with it that they preserved the vine and the tree upon which it grew. "That was the vine which I saw," says Mr. Forbes, "and from which other vines were propagated." They called it the "White Grape," and from it made what they called "Country Wine." At the suggestion of a relative, who had been in the Mediterranean, and knew the indefiniteness of such names as these, they subsequently named the Grape from the river upon which it was found. "This is the history given by a granddaughter of one of the discoverers, who was alive when I first went to Scuppernong."

A tradition is furnished me by Dr. Hunter, that,

"about the year 1774, the Rev. Charles Pettigrew found it on the low grounds of Scuppernong River, and planted out several vines." My limited space will not permit an exhaustive discussion of this matter here, and I will, therefore, only remark further upon it, that the notion of its origination on Roanoke Island seems opposed by the name of the Grape. I have also been told by those who have been on the Island, that there are no vines of it there which were not evidently transplanted there.

4. Frost Grape. Winter Grape. (V. cordifolia, Michx.)—Common in thickets along streams through the Middle District. The leaves are 3 to 5 inches broad, thin, smooth, toothed, and sometimes cut into three segments. The berries are nearly black, small, ¼ inch thick, and very sour until dead ripe. The berries are sometimes greenish-white, and Lawson mentions a white [whitish?] variety. I have not heard of this being cultivated.

5. (V. bipinnata, Torr. & Gr.)—This would not generally be taken for a member of this genus, either from its leaves, which are compound, like those of the China Tree, or from its fruit, which is uneatable. The berries are blackish, slightly hairy, and about the size of a small pea. It is found in the Lower and Middle Districts, growing in rich soils, climbing (without tendrils) over shrubs and small trees.

Virginian Creeper. (Ampelopsis quinquefolia, Michx.)—This pretty vine, sometimes cultivated, is found along fence-rows and borders of woods in all

parts of the State. It may be known by its leaflets growing in *fives* from the end of a common leaf-stalk, as in the Buckeye, which is the case with no other of our Climbers. The foliage becomes crimson in the Fall. The berries are dark-blue, about the size of a small pea, borne on bright crimson foot-stalks. The rapidity of its growth renders this Creeper useful for covering old walls, etc., like the English *Ivy*. It is, indeed, sometimes called *American Ivy*. This is often confounded with the *Poison Vine*, though having very little likeness to it, and is hence avoided, though it be quite innocent.

1. Woodbine. (Lonicera sempervirens, Ait.)—This beautiful vine, now common in cultivation, grows from the coast to the mountains. The flowers are tubular, 1 to 2 inches long, scarlet without and yellow within. In rich soils it has a very luxuriant growth, climbing high into forest trees.

2. Yellow Woodbine. (L. grata, Ait.)—This belongs to the mountains, and has a flower 1 to 1½ inch long, reddish on the tubular part, whitish at top, then changing to yellow, somewhat fragrant. The young branches are often hairy.

3. Small Woodbine. (L. parviflora, Linn.)—Found in the mountains, less climbing than the others, with flowers about ⅔ inch long, somewhat swollen at the base of the tube, and greenish-yellow tinged with purple.

I have heard of a yellow species in Gates County, but have never seen any specimens.

1. Common Bamboo or Green Brier. (Smilax rotundifolia, Linn.)—Very common in all the Districts, generally in thickets where the soil is rather fertile, 20 to 40 feet long, the stems and branches of a yellowish-green color, round, and armed with strong prickles, the branchlets slightly angled. The leaves are deciduous, 3 or 4 inches long, roundish and heart-shaped. The berries, as in most of the species, are bluish-black, borne in bunches upon a common stalk in the fork of the leaves, and which is about the same length with the leaf-stalk.

2. (S. tamnoides, Linn.)—A stout prickly vine with angled branchlets, occurring in the Lower and Middle Districts. The leaves are somewhat fiddle-shaped or contracted in the middle, the base sometimes spreading into rounded projections. The general fruit-stalk is a little flattened, about 1½ inch long, and twice the length of the leaf-stalk.

3. China Root. (S. Pseudo-China, Linn.)—Stout and prickly like No. 2, 10 to 15 feet long, the branches roundish and not prickly, and the roots tuberous. The leaves are large, 4 to 7 inches long, ovate, green both sides, the edges and nerves on the underside roughened with minute prickles. The general fruit-stalk is flat and 2 or 3 inches long. The berries are blackish and larger than in the preceding species.

4. Sarsaparilla. (S. glauca, Walt.)—Not uncommon in all the Districts in cultivated grounds near streams. The stems are prickly and 2 to 4 feet

long. The leaves are ovate, and covered, especially on the underside, with a white bloom that rubs off under the finger. The berries are black. The common fruit-stalk is 2 or 3 times longer than the leaf-stalk. The root of this is sometimes used in the composition of diet drinks. It is not the Sarsaparilla of the druggists, but is said to be often mixed with it.

5. (S. Walteri, Pursh.)—Stem dark green, angled, 10 to 15 feet long, having prickles only towards the bottom, running over bushes and up small trees in branch swamps of the Lower District. Leaves deciduous, ovate, heart-shaped, smooth, dark shining green above, paler beneath, terminating in a small, almost prickly point, 3 to 4 inches long, 2 to 3 wide, and having 3 distinct and 2 obscure nerves. The berries are scarlet and very conspicuous in Winter. This has a creeping root.

6. (S. lanceolata, Linn.)—This and No. 5 are the only species with red berries. But this has evergreen leaves, narrower than in the preceding and acute at base. The branches, too, are not angled, and the root is tuberous. I have not myself met with it, and give it on the authority of others.

7. (S. laurifolia, Linn.)—This is a showy species, and like Nos. 6 and 8, has evergreen leaves. It runs to a great length over bushes and up lofty trees, the lower part only being prickly. The leaves are thick and shining, lance-shaped or oblong. The general fruit-stalk is equal to the leaf-stalk, $\frac{1}{6}$ to $\frac{1}{4}$ inch long.

Berries black. This seems confined to wet places in the Lower District.

8. (S. auriculata, Walt.)—Similar to No. 7, slightly or not at all prickly, growing over small shrubs on the coast; flowers fragrant. The leaves are perennial, 1 to 2 inches long, narrowly ovate, 3 to 5 nerved, with conspicuous cross veins, especially beneath, terminated by an abrupt almost prickly point. Common fruit-stalk rather shorter than the leaf-stem. Berries black.

RATTAN. SUPPLE JACK. (Berchemia volubilis, DC.)—A very tough flexible vine running up trees. The leaves are alternate, 1 to 2 inches long, ovate, dark green, very smooth, not toothed, having prominent parallel unbranched straight veins running obliquely from the midrib to the margin. The berry is dark purple, about ¼ inch long, with a thin coat and a hard smooth nut. Grows from Virginia southward through our Lower District.

(Sageretia Michauxii, Brogn.)—Grows upon the sandy soil of the coast, 6 to 18 feet long, with thorn-like spreading branches. Leaves 1 inch long, ovate, opposite, smooth and shining, finely toothed. Flowers very small, in loose clusters. The berry is small and round, dark purple, and pleasantly acid. I have not met with this, and have introduced it here on the authority of Michaux.

(Cocculus Carolinus, DC.)—This runs extensively over shrubs and small trees on the borders of damp woods and streams, from the coast to Lincoln.

The leaves are 2 to 4 inches long, broadly ovate and heart-shaped, sometimes 3 lobed, smooth above, with a soft gray down underneath. The ripe berries are red, about the size of a small pea, growing in small clusters, containing a hard flat nut which is curved nearly into a ring.

Moon Seed. (Menispermum Canadense, Linn.)—This is 6 to 12 feet long, and woody only in the lower part. It is the only one of our woody Climbers that has the leaf-stalk inserted into the plate of the leaf instead of the lower edge. The berries are black and contain a flat nut, as in the preceding species, curved into the form of a horse shoe. Rare in the Lower District, not uncommon elsewhere.

Poison Vine. (Rhus radicans, Linn.)—Now considered by Botanists as only a variety of *Poison Oak*, but necessarily separated in the arrangement I have adopted. It is the only trifoliate woody Climber we have. Like *Poison Oak* and *Poison Sumach*, very poisonous to some people. Common throughout the State.

The next Group of Climbers, comprising five genera, have their fruit in dry *pods*. All of the species are ornamental.

Trumpet Flower. (Tecoma radicans, Juss.)—This splendid Climber, ascending the loftiest tree, is found from the coast to the lower part of the mountains, preferring damp rich soils. Its dark green compound leaves, and scarlet tubular flowers which

are 2 to 3 inches long, make it an attractive ornament in yards and gardens. This harmless plant has the reputation, with some, of being poisonous.

Cross Vine. (Bignonia capreolata, Linn.)—This, like the preceding, is sometimes called *Trumpet Flower*. The flowers are of similar form, about 2 inches long, but are of a duller red on the outside and yellow within. The leaves are of a dull green, growing in pairs from the end of a common footstalk, each leaflet also having its own stalk. This does not climb to so great a height as the other. A cross section of the stem exhibits a portion of its inner structure in the form of a Maltese cross, which gives the name to this plant. Not uncommon in the Lower and Middle Districts.

Virgin's Bower. (Wistaria frutescens, DC.)—This luxuriant, much admired Climber is found, I think, only in damp rich soils of the Lower District. It stands cultivation remarkably well in the Middle District. The leaves are pinnate, like those of the Locust; and the flowers are of the size and structure of the Garden Pea, purplish-blue, in large pendent compact clusters 4 to 6 inches long. We have no other woody Vine answering to these characters. The stem is exceedingly tough and serves well for withes or ligatures.

Carolina Jessamine. (Gelsemium sempervirens, Ait.)—No plant is more common in the Lower District, but it reaches very little into the Middle. It extends northward into Virginia, but becomes

much more luxuriant as we go south. Its graceful evergreen leaves, the profusion of its large, bright yellow and deliciously fragrant blossoms, render this vine the pride of our forest. The odor of the flowers in a close room sometimes induces headache. Most of the plant, especially the root, taken internally, is narcotic and poisonous. A tincture of the root, *judiciously administered*, is useful in rheumatic affections; but in the hands of quacks death has been caused by it.

(Forsteronia difformis, A. DC.)—A smooth twining plant, 6 to 12 feet long, found chiefly in the Lower District, but extending into the interior as far at least as Wake County. It is sometimes mistaken for the *Yellow Jessamine*, but the flowers are tubular and smaller, more like those of a Woodbine, about 1-3 inch long, and greenish-yellow. The fruit is a slender pod, containing seeds that have a tuft of down.

The next GROUP of three genera have their seeds in small dry capsules.

WAX-WORK. BITTERSWEET. (Celastrus scandens, Linn.)—This is to me the rarest plant in the State, as I have seen but a single stock, near Lincolnton. This is its most southern known limit. It ascends trees to the height of 12 or 15 feet. The leaves are about 3 inches long, taper pointed, smooth, toothed. The berry-like capsule is orange-red, clustered on the ends of its short branches, of the size of a large pea, bursting when mature and disclosing 3 to 6 scarlet seeds. In this state it is quite an ornamental vine.

(Decumaria barbara, Linn.)—A pretty vine ascending trunks by means of rootlets insinuated into the bark, after the manner of the *Poison Vine*. The leaves are 3 to 4 inches long, broadly ovate, opposite, rather thick and shining, generally with scattered teeth towards the upper end. The flowers are small, white and fragrant, in showy compound clusters on the ends of the branches, opening in May. This is found in the Lower District only, and is unknown north of this State.

Wild Ginger. Big Sarsaparilla. (Aristolochia Sipho, L'Her.)—Found in rich soils all along our mountain rivulets, climbing over bushes, and sometimes ascending trees. The stems are occasionally 2 inches thick. The leaves are roundish, heart-shaped, 8 to 12 inches broad, and slightly downy on the underside. The flower is coarse, brownish-purple, 1½ inch long, somewhat tubular, with top cut into three segments, below which it is contracted and curved like a Dutch pipe, from which, in some parts of the United States, it has gotten the name of *Dutchman's Pipe*. The root is very aromatic and stimulant, like Ginger, and would serve as a medicine where these properties are indicated.

The two remaining genera have *naked seeds*, which are remarkable for their long feathered tails.

Virgin's Bower. (Clematis Virginiana, Linn.)—A partly woody vine, 10 to 15 feet long, climbing over thickets and fences. It is found from the coast to the mountains, generally near streams, but is less

common in the Lower District. The leaves are composed of 3 ovate leaflets which are a little cut. The flowers are in loose clusters, ½ to ¾ inch broad, and clothing the upper part of the vine with a flowing mantle of white. The flowers are succeeded by heads of feathered seeds which are still more ornamental than the blossoms.

(Atragene Americana, Sims.)—This is accredited by others to the mountains of North Carolina, but it has escaped my own observation. It is a very showy vine, both in fruit and flower, and, like the preceding, is woody only in its lower parts. It climbs over rocks and bushes by means of its leaf-stalks. The leaves are in pairs on opposite sides of the stem, making 4 in a circle, each long leaf-stalk bearing 3 leaflets. The flowers are bluish-purple, 2 to 3 inches broad, followed by heads of seeds which have long feathered tails.

A TABULAR

View of the Species,

ARRANGED ACCORDING TO THE CHARACTER OF THEIR FRUIT.

I.—TREES.

FLESHY FRUIT.—*Stone Fruit.*—Plums, Cherries, Mock Orange, Devil Wood. *Pulpy Fruit.*—Apples, Persimmon.

BERRIES.—*Red.*—Holly, Service Tree, Dogwood, Mountain Ash, Magnolias, Yellow Wood, Hackberry. *Black or Blue.*—Mulberry, Palmetto, Buckthorn, Black Gum, Cedar, Sassafras, Red Bay. *Whitish.*—China Tree.

DRY FRUIT.—*Nuts.*—Oaks, Hickories, Walnuts, Chestnut, Chinquapin, Beech, Buckeye. *Cones.*—Pines, Firs, Spruces, White Cedar or *Juniper*, Cypress. *Pods.*—Locust, Honey Locust, Catalpa, Coffee Tree, Red Bud. *Tassels.*—Willows, Poplars or Cottonwoods, Birches, Hornbeam, Iron Wood. *Bur.*—Sweet Gum. *Nutlets.*—Sycamore, Planer Tree. *Flat and Winged.*—Maples, Ash-leaved Maple, Ashes, Elms. *Capsules, Large.*—Tulip Tree or *Poplar*, Loblolly Bay. *Small.*—Linn Tree, Sorrel Tree. *Winged Nuts.*—Snow Drop Tree.

II.—SHRUBS.

FLESHY FRUIT.—*Stone Fruit.*—Plums, Fringe Tree, Oil Nut. *Large Fleshy.*—Papaws, Spanish Bayonet, Bear Grass, Roses. *Red.*—Red Haws, Barberry, Bermuda Mulberry, Huckleberry, Creeping Huckleberry, Bearberry, Cranberry, Elder, Coral Berry, Chokeberry, Yopon, Dahoon Holly, Sumach, Poison Oak, Flowering Raspberry, Mountain Tea, Spice Bush, Pond Bush, Leather Wood, (Ilex.)*

BERRIES.—*Black or Blue.*—Black Haws, Gallberries, Dogwoods, Privet, Carolina Buckthorn, Prickly Ash, Elder, Dwarf Palmetto, Gooseberries, Currants, Huckleberries, Sparkleberry, Blackberries, Dewberry, Raspberry. *Whitish.*—Mistletoe, Deerberry, Dogwoods.

DRY FRUIT.—*Nuts.*—Hazel, Buckeye. *Nutlets.*—Witch Hazel, Button Bush, Dwarf Alder, Wax Myrtle, Sweet Fern. *Tassels and Cones.*—Willows, Alder, Arbor Vitæ. *Bladdery.*—Bladder Nut, Sweet Shrub. *Flat and Winged.*—Maples, Hop Tree. *Naked Seeds.*—Marsh Elder, Groundsel. *Grass-like.*—Reed or Cane.

DRY CAPSULES.—Laurel, Ivy, Wicky, Honeysuckles, Dog Laurel, Fetter Bush, Pepper Bush, Stagger Bush, (Andromeda), (Cassandra), (Leucothœ), Sweet Pepper Bush, (Itea), Sand Myrtle, He Huckleberry, False Heath, Syringa, Hydrangea,

*N. B. Plants without a popular name are enclosed in parentheses, and will be found also in the Index.

Hardhack, Queen of the Meadow, Bush Honeysuckle, Strawberry Bush, Burning Bush, Trailing Arbutus, (Hudsonia), Swamp Loosestrife, Toothache Tree, Indigo Bush, Mock Orange, (Stuartia), (Stillingia), (Darbya), (Buckleya), Red Root, Yellow Root, Rock Rose, (Ascyrum), Flowering Moss.

III.—VINES.

Berries.—*Reddish.*—Grapes, Woodbine, Bamboo, Poison Vine, (Cocculus). *Blackish.*—Grapes, China Root, Bamboo, Sarsaparilla, Virginia Creeper, Rattan, Moonseed, (Sageretia), (Berchemia).

Pods.—Trumpet Flower, Cross Vine, Jessamine, Virgin's Bower, (Forsteronia).

Capsules.—Bittersweet, Wild Ginger, (Decumaria).

Naked and Feathered Seeds.—Virgin's Bower, (Atragene).

Plants of North Carolina.

In 1867 the State printed the Second Part of Dr. Curtis's report to the State Geologist, being "a catalogue of the indigenous and naturalized plants of the State."

The catalogue, says Dr. Curtis in his preface, is of "interest to scientists as determining the localities and range of our vegetation, and as being much the most extensive local list of plants ever published in North America."

It is not reprinted here, because those interested can obtain copies on application to the State authorities at Raleigh. It is a pamphlet of 156 pages, 8vo. For the general reader, it is sufficient to give here Dr. Curtis's

SUMMARY.

FLOWERING PLANTS.

Exogenous, . . .	1,362 species.	
Endogenous, . . .	511	
		1,873

FLOWERLESS PLANTS.		
Equisetaceæ, . . .	1 species.	
Filices, ...	37	
Lycopodiaceæ, . . .	9	
Hydropterides, . .	1	
Musci, ...	198	
Hepaticeæ, ...	69	
Lichenes, ...	217	
		532
Fungi—Hymenomycetes, .	935	
Gasteromycetes, . .	150	
Coniomycetes, . .	341	
Hyphomycetes, . .	188	
Ascomycetes, . . .	715	
Physomycetes, . .	21	
Doubtful Genera, .	42	
		2,392
Characeæ, ...	2	
Algæ, ...	50	
		52
Total species, ...		4,849

PART II.

Forests, Farms, Population,

OF

NORTH CAROLINA.

THE

Forests of North Carolina.

LOCATION AND EXTENT.

Dr. Curtis's WOODY PLANTS OF NORTH CAROLINA, reprinted in Part I. of this book, furnishes information complete and accurate of a Flora which is the wonder of the botanist.

Part II., it is believed, conveys knowledge as complete and accurate of the location and extent of standing forests.

First, is reprinted the Botanical Chapter from Dr. Kerr's Geological Survey of North Carolina, Volume I.; and,

Second, reports from the several counties of the State, obtained by the publisher and compiler of this volume from citizens esteemed the best informed.

DR. KERR'S BOTANICAL REPORT.

It has long been known to botanists that the territory of North Carolina presents one of the finest fields in the United States for collection, on account of the great variety and interest of its vegetable

productions. Many plants of northern habit, such as are common in the White Mountains, for example, and along the northern lakes, find their southern geographical limit in the mountains of this State; and quite a number of others spread from the Gulf and the Mississippi Valley to the Cape Fear, and even to Pamlico Sound. So that the flora of this State is continental in character and range, combining the botanical features of both extremes as well as of the intermediate regions.

The results of the preceding discussion of the climatology of the State furnish ample explanation of the fact. The close connection between climate and organic life, and the decisive control which meteorological conditions exert over the whole character and range and form of its development, render it practicable to infer the latter from the former, at least as to general outlines.

But it happens that the botany of North Carolina has received much earlier attention and a far greater amount of study, and has been much more fully worked out than its climatology, so that the inferential process has needed to be reversed, and the range and character of the climate to be deduced from botanical data. This is due in large part to the attractive nature of the field to the botanical explorer, which has engaged the interest and study of some of the most famous botanists of both Europe and America, from the time of Bartram's tour, in 1776, and of the elder Michaux, 1787, and of the younger, an

equally distinguished botanist, in 1802, to the later explorations of Nuttall, and of Dr. Gray and Mr. Carey, who traversed the higher ranges of our mountains in 1841, and especially of the Rev. Dr. Curtis, to whom the State owes a debt, in this regard, which she does not yet fully appreciate. It is due to him more than to any one else,—to his skill and zeal in his favorite science, that North Carolina stands among the foremost of the States in respect to the completeness as well as the scientific accuracy of the knowledge which the world possesses of her singular botanical wealth.

In witness of the remarkably wide range of vegetable forms, corresponding to the variety of climatic conditions, may be cited the fact of the occurrence within the limits of the State on the one hand, of the white pine (*pinus strobus*) and the black spruce (*abies nigra*), which are found along the Appalachians from North Carolina to the White Mountains and Canada, and of the hemlock spruce (*abies Canadensis*), whose range reaches from our mountains to Hudson's Bay; and on the other, of several species of magnolia and the palmetto, which have their northern limit in the southeast part of the State and spread thence to the Gulf. And the same point might be illustrated even more strongly to the botanist, by the mention of other but inconspicuous species among the lower orders of plants, as the mosses, lichens, etc.

And as concerns the variety of plants which characterizes the flora of the State, it is sufficient to men-

tion the fact that Dr. Curtis's Catalogue contains nearly 2,500 species, leaving out the mushrooms (*fungi*), of which there is about an equal number, or almost 5,000 in all.

Dr. Cooper in his general description of the "Forests and Trees of North America" in the Smithsonian Report for 1858, says: "Coming next" (from the Canadian) "to the Appalachian province, we find a vast increase in the variety of our forest trees. In fact, looking at its natural products collectively, one of the most striking, as compared to the rest of the world between the 30th and 45th degrees of north latitude, is its richness in trees, which will compare favorably with almost any part of the tropics. It contains more than 20 species which have no representatives in the temperate climates of the old world, and a far greater number of species of the forms found there." Some of our most valuable timber trees are wholly wanting, as the hickory. And while there are not 50 indigenous species of trees in Europe which attain a height of 50 feet, there are above 140 in the United States, and more than 20 of these exceed 100 feet. Says Dr. Curtis, "In all the elements which render forest scenery attractive, no portion of the United States presents them in happier combination, in greater perfection, or in larger extent than the mountains of North Carolina."

And in order to realize the extent to which this richness of forest development is concentrated within the area of this State, it is only necessary to call at-

tention to the distribution of a few kinds which are dominant and characteristic. Of species found in the United States (east of the Rocky Mountains), there are

Oaks,	22,	and	19	in	North	Carolina.
Pines (trees),	8,	"	8	"	"	"
Spruces,	5,	"	4	"	"	"
Elms,	5,	"	3	"	"	"
Walnuts,	2,	"	2	"	"	"
Birches,	5,	"	3	"	"	"
Maples,	5,	"	5	"	"	"
Hickories,	8,	"	6	"	"	"
Magnolias,	7,	"	7	"	"	"

And as to the first and most important group of the list, Dr. Curtis has called attention to the very striking fact that there are more species of oaks in this State "than in all of the States north of us, and only one less than in all the Southern States, east of the Mississippi."

It will be observed that the kinds of trees which characterize this flora include chiefly such as are most valuable in the arts. The long-leaf pine alone is the basis of industries whose annual products in this State are not less than $3,000,000. The juniper and cypress have long been a source of large revenues to the whole eastern region. And it is worthy of mention in this connection, that, besides the present crop of trees, there are over large areas of the swamp lands several successive generations of buried forests,

whose timber is in good preservation, ready to be exhumed when the present growth shall have been exhausted.

The most characteristic and prevalent species of the middle region are the oaks. Several kinds of white oak, so much in demand, and so highly prized in ship building and numerous domestic arts, are abundant in all parts of this division and especially in the mountains. There are also large tracts of white pine on both sides of the Blue Ridge. The hickories are found everywhere, and the black walnut is plentiful in the river bottoms and on the fertile slopes of the mountains, so common as to be used for fencing; and the wild cherry, mahogany (*black birch*), and several species of maple furnish abundant cabinet materials; and to these should be added the extensive forests of holly in the eastern region.

Nearly every one of the 20 kinds of timber admitted to the New York ship-yards as suitable for building vessels is found in this State in abundance; and since the forests of the North Atlantic States are very nearly exhausted, and timber for ship building is brought to the coast from the upper Mississippi, and even foreign governments are exporting large supplies for their navy yards from the interior of the continent, it is evident that our forests have a value and are entitled to a consideration which they have never received among us. We have still some 40,000 square miles of forests of which the larger part is as yet unviolated by the woodman's axe. And I

think it safe to say that the intrinsic value of this heritage alone is such, that within ten years it will be seen, that it exceeds the present total valuation of the entire property of the State. And it is time for the people of the State, and its legislators especially, to begin to realize and take account of the fact, that here is one of the most valuable, as it is also one of the most undeveloped and little considered of her natural resources. And its value is appreciating more rapidly than that of any other kind of property in the State; and this from two causes, the operation of which is incessant and rapid, and the results inevitable and soon to become actual, viz.: the rapid exhaustion of the more accessible forests of the continent and the constantly accelerating consumption of their products, and the increase and cheapening of the means of transportation to those parts of the world where the demand is greatest.

COUNTY REPORTS.

ALEXANDER. (Area, 318 sq. miles.)—Taylorsville, Oct. 13, 1882.—We have in this county white oak, post oak, red oak, black oak, Spanish oak, and chestnut oak; black and yellow pine, and some white pine; cedar, poplar or tulip tree, maple, beech, birch, mahogany, hickory, dogwood, walnut, cherry, chestnut, ash, black and sweet gum, cucumber tree, elm, etc. The prevailing growth is the different varieties

of oak and pine. At least one half of the county is covered with native forest, to say nothing about what is covered with old-field pine.—J. P. M.

ANSON. (525 square miles.) — Raleigh, Sept. 29, 1882.—Anson produces as great a variety of timbers, perhaps, as can be found in any one county in the State. It is bounded on the east and north by the Pee Dee and Rocky rivers, into which flow numerous small streams that traverse the county, and along which are broad areas of rich bottom lands that are covered with heavy growth of the finest timbers. The western boundary of the Long-leaf Pine region passes across the eastern end of the county, covering perhaps one fourth of its area with timber of very superior quality. On the uplands the predominant growth is pine, oak, and hickory, each of which is represented by several species; but everywhere almost are to be found dogwood, ash, poplar, gum, black jack, birch, beech, elm, maple, and persimmon. Along the streams the haw and yellow willow abound. The wooded acreage is about one third of the entire area of the county.—L. L. P.

ASHE. (468 square miles.) — Jefferson, Sept. 2, 1882.—There is no pine in this county except white pine and tamarack, and not very much of the latter, —perhaps 1,000 acres. There is perhaps 5,000 acres of white pine forest in this county of good quality and of good stand. The prevailing growths of other timber are chestnut, white oak, black oak, chestnut oak, water oak, and Spanish oak or red oak, hickory,

walnut, poplar, ash, sugar maple, silver maple, etc. There is a large acreage of spruce pine, and there are large quantities of birch, beech, mahogany, cucumber, locust, wild cherry, buckeye, etc. The wooded acreage is about seventy per cent.—J. W. T.

BLADEN. (1,000 sq. miles.)—Elizabethtown, Sept. 7, 1882. — Long-leaf pine is the prevailing growth, except on the river and creeks, where there are hickory, different kinds of oak, some walnut, ash, etc. My estimate is that nine tenths of the county is in timber.—J. A. M.

BRUNSWICK. (975 sq. miles.)—Town Creek, Sept. 11, 1882.—All of our uplands are long-leaf pine and scrub oaks. Our bays and swamps abound with cypress, ash, poplar, juniper, and gum. On the sea-coast from Cape Fear to the South Carolina line there is live-oak and cedar, valuable for ship-building.—E. W. T.

BRUNSWICK, COLUMBUS, BLADEN, ROBESON, RICHMOND, ANSON, UNION, MECKLENBURG, LINCOLN, GASTON, CLEVELAND. (Area, 7,675 sq. miles.) *Route of Carolina Central Railroad.*—Shoe Heel, Aug. 24, 1882.—Brunswick County has a wood acreage of about two thirds. Prevailing growths are pine, cypress, and oak, of which one half is pine.

Columbus County has a wood acreage of about two thirds. Prevailing growths are pine, oak, and cypress, of which one half is pine.

Bladen County has a wood acreage of about two thirds. Prevailing growths are pine, oak, and cypress, of which one half is pine.

Robeson County has a wood acreage of about two thirds. Prevailing growths are pine, oak, and cypress, of which one half is pine.

Richmond County has a wood acreage of about two thirds. Prevailing growths are pine, juniper, and oak, of which one half is pine.—W. B. S.

Charlotte, Aug. 28, 1882.—Cleveland: white, post, black, red, Spanish, water, and some chestnut oak; hickory, ash, walnut, and some poplar, and short-leaf pine. Oaks are the prevailing growth in this county.

Gaston: About same as above, except that more pine is found in this county.

Lincoln: Same.

Mecklenburg: All the oaks grow here; also hickory, ash, maple, birch, elm, poplar, and short-leaf pine and some walnut. Oak and hickory is the prevailing growth.

Union: All the different oaks grow in this county, but not so abundant as in the counties named above. Short-leaf pine is the most abundant.

Anson: White oak; post, black, red, Spanish and water oak; hickory, poplar, ash, elm, sweet gum; birch, short-leaf pine. South-east part of county has some long-leaf pine.—T. W. W.

Caldwell, Wilkes, Alleghany, Ashe, Watauga, Mitchell, Yancey, Burke. (Area, 3,468 sq. miles)—Patterson, Aug. 29, 1882. — . . . . I now address myself to your questions, and give first a list of all the trees that I can now remember as native

here. 2d. Such as are of commercial value. 3d. Aereage and location.

Native forest growth of Caldwell County.—Oaks: White, black, red, Spanish, chestnut, water, post, scrub, black jack. Chestnut, one kind. Pine: Yellow, white, spruce or hemlock, black, alligator (?), old-field, balsam or fir. Hickory: White, red, scaly-bark. Maple: Sugar, bird's-eye, white, curly, black. Holly, one kind. Red elm. Red cedar. Locust: White, yellow, and black. Botanists may not admit this distinction, but there is a difference. Walnut: Black, white. Poplar: Yellow, white. Beech, one kind. Sycamore, one kind. Birch: White. Ash, one kind. Linn, one kind (spelling not vouched for). Cucumber (Magnolia cucumifera). Dogwood. Persimmon. Mulberry: White, yellow. Wild Cherry. Mahogany, or Mountain Birch (local name). Wahoo (spelling doubtful). Slippery Elm. Catalpa. Aspen. Willow: White, golden, weeping. Buckeye.

Such as are of commercial value, and their uses.—White Oak; (ship timber, wagons, staves.) Chestnut; (furniture panels, etc.) Yellow Pine; (lumber.) White Pine; (lumber, sash, doors, blinds.) Hickory; (wagon material, handles, etc. All these kinds used, but white the best). Maple: Bird's-eye, Curly; (furniture, panels, etc. White and Black used for heavy frame-work for machines requiring strength and durability.) Holly; (to some extent for furniture, but more for spools, bobbins, etc.) Locust, yellow; (ship pins and posts.) Walnut,

black; (furniture, ornamental work.) Poplar, yellow; (shingles and lumber.) I think this wood would be excellent for patterns for foundries, but is as yet untried. Ash; (wagons, handles, panels.) Dogwood; (shuttles.) Persimmon; (shuttles.) Wild Cherry; (furniture and ornamental work.) In addition to the above, the chestnut oak is valuable for its bark for tanning purposes, for which it is more valuable than all other trees.

Remarks.—The southern one-third of the county of Caldwell, or that part drained by the Catawba River, has a uniform and heavy growth of yellow pine, to the exclusion of every other growth. This covers an area of perhaps one hundred square miles, in forest.

North of this, on the spurs and in the valleys of the Brushy Mountain range, is a forest growth of great and remarkable variety, embracing all the oaks, poplars, and to some extent nearly all the trees enumerated above, with the exception of the balsam or fir. The prevailing growth, however, is oak, hickory, and chestnut.

Still north of this, and between the Yadkin River and the top of the Blue Ridge, come in the walnut and cherry, cucumber, locust, maples, and white pine; and in the extreme north, along the high peaks of the Blue Ridge, the balsam, which is only valuable for the aromatic and medicinal gum found in blisters on its outer bark.

As I have already remarked, our forests are greatly

diversified except in the southern part of the county, where the yellow pine prevails. In order to give you an approximate idea of the location of these forests, I will say that in the southern part of the county there is an area of yellow pine covering 65,000 acres. In the central part of the county, from west to east, is the oak, hickory, chestnut, etc., embracing about 102,000 acres.

North of this, toward the top of the Blue Ridge, comes in all the white pine, walnut, cherry, etc., that we have; and I suppose we might say that here the white pine was the prevailing growth, covering at a rough estimate 122,000 acres.

So that we have a total wooded area as follows:

Yellow pine,	65,000 acres
Oak, hickory, etc.,	102,000 "
White pine,	122,000 "
Total forest area,	289,000 acres

What has been said of Caldwell applies equally, except perhaps as to geographical location of the forests, to the counties of Wilkes, Alleghany, Ashe, Watauga, Mitchell, Yancey, and Burke, except that in Caldwell alone will you find any considerable quantity of yellow pine, and in all the others mentioned, except Wilkes and Burke, there is more white pine than we have. Outside of these northwestern counties above mentioned you will find no white pine in North Carolina worth mentioning.

There is also more cherry, walnut, and ash in

Ashe, Watauga, Mitchell, and Yancey than we have, and this valuable timber extends on west to Ducktown in large quantities and great perfection.

Of the other north-western counties noted above, I estimate the wooded areas as follows:

Wilkes, ...	480,000 acres
Alleghany, ...	179,200 "
Ashe, ...	216,000 "
Watauga, ...	245,400 "
Mitchell, ...	260,000 "
Yancey, ...	234,000 "
Burke, ...	302,000 "

E. J.

CAMDEN. (280 square miles.) South Mills, Aug. 24, 1882.—There is considerable Long-Leaf Pine (Lob-lolly) in this county. Half of our lands are in the primitive forest, and at least 20 per cent. of the growth of timber now standing is this kind of pine. Our swamps, which cover at least one-fifth of the area of Camden, abound in juniper and cypress (both kinds very valuable), of which 60 to 75 per cent. have been removed. Some oak is still standing, but has mostly been cut, not over 10 per cent. remaining. No other kinds of valuable timber remaining in the county.—F. N. M.

CARTERET. (525 square miles.)—Sanders' Store, Sept. 26, 1882.—The timber in our forests consists of long-leaf and short-leaf pine, as the principal and most abundant kinds; the various kinds of oaks, the

most abundant kinds being the red and black-jack varieties. Our swamps abound with oak and cypress. We have some hickory, but of smaller size.—J.W. S.

CABARRUS. (400 square miles.)—Pioneer Mills, Aug. 26, 1882.—We have short-leaf (yellow) pine, hickory, post, black, red, white and Spanish oaks. Oaks of the different varieties (interspersed with pine in certain sections) are the prevailing growth. But little walnut or finer woods. In the better sections of lands timber is very scarce. In the poorer sections timber more abundant and of but little value now.—J. C. B.

CATAWBA. (375 square miles.)—Hickory, Sept. 6, 1882.—We have very little walnut and hickory. Our forests are of yellow pine, white, post, black and red oaks. Pine is the principal growth.—H.

CHATHAM. (825 square miles.)—Pittsboro, Sept. 11, 1882.—Our forests consist of oaks, hickory, dogwood, walnut, old-field pine. The different varieties of oak, the prevailing growth.—J. A. A.

CASWELL. (400 square miles.)—Leasburg, Aug. 22, 1882.—In quantity the oak predominates; white, red, post oak, Spanish, black and willow oak, are found in abundance in all original forests, in every part of the county, and in the western portion the chestnut oak is abundant. Hickory is next most abundant. The pine is in all the original forests fast passing away, though there are sections of the county in which this valuable tree is abundant. There is little or no walnut now in our forests, but there are

many large old walnuts, that, though scattered, would afford large quantities of valuable timber. The dogwood is abundant, and is in all parts of the county; so is the persimmon. The poplar (tulip) is not abundant, yet there is a good quantity of this valuable timber in all our forests. The gums (both sweet and black) are common; so is the sycamore. Apart from our original forests there are large tracts of country covered with forests of pines, which is a valuable local timber used in the construction of tobacco houses and log dwelling houses and other buildings important to the husbandman and cultivator of the soil. So much of the land of Caswell is now covered with a growth of trees, called here the "second growth," of a mixed character, with oak, hickory, pine, gum and dogwood, etc., prevailing, that it sometimes proves difficult to ascertain the end of the second growth and the beginning of the original forest; and there are such extensive tracts grown up in young pine, which if left alone a few years will become forests indeed, that it would not be an over estimate to say that one-half of the land of Caswell county was either in original forest or in process of making forests.—G. N. T.

CLEVELAND. (425 square miles.)—Cleveland Mills, Aug. 25, 1882.—Our forests are composed principally of the usual variety of oaks, black, red, Spanish, white and post oak, with some chestnut oak on the high ridges and mountains, yellow pine, hickory; and on the low lands and streams white maple, beech, birch

and sycamore. Chestnut is abundant in the mountain portion of the county, and a considerable amount of wild or black locust. Our woods, especially "old fields," as they are called here, also abound in dogwood. When our ancestors "*wore out*" a piece of land and abandoned its cultivation it never failed to bring an abundant crop of "old field" pine. It has very little heart, and for exposed parts is not durable, but still it is quite valuable for many purposes, growing very tall and thick on the ground. We also have the persimmon, a very hard wood. Walnut is scarce here, though there is a little black walnut in the mountains, and a few domestic trees around the farms. The prevailing growth is yellow pine, a variety of oaks and hickory. Taking the whole county over there is about 50 per cent. in virgin forest. With the lands covered with second or old field growth there may be 60 or 65 per cent. in timber.—H. F. S.

CUMBERLAND. (950 square miles.)—Fayetteville, Aug. 25, 1882.—I have, with the aid of others, with some care made an approximate estimate of the principal woods of this county, statement appended:

Number of acres, ...	425,000
Long-leaf Pines, ...	350,000
Converted into lumber would make,	350,000,000 ft.
On same lands Short-leaf in bottoms and swamps, ...	50,000,000 "
Poplars, ...	150,000,000 "
Cypress, ...	400,000,000 "

Black, sweet and other gums, . .	300,000,000 ft.
Juniper, ...	60,000,000 "
Beech, ...	50,000,000 "
White, water and red oak, . . .	50,000,000 "

Besides considerable quantities of dogwood, hickory, bull bay, mulberry; and in river bottoms and adjacent, sycamore and black walnut.—J. D. W.

CUMBERLAND, HARNETT, MOORE, CHATHAM, RANDOLPH, GUILFORD, FORSYTH, STOKES, SURRY, YADKIN, WILKES, CALDWELL, MITCHELL. (Area 7,656 square miles.) *Route of Cape Fear and Yadkin Valley Railroad.—Extracts from Special Report of State Geologist Kerr.*—"The above facts—the variety of soils, the wide range of temperature, and the abundant rainfall, have, of course, found expression in a correspondingly great range of natural products, the flora having a really continental breadth and variety, from the palmetto and live oak on the one hand, to the white pine and Canadian fir on the other, so that what I have said in the geological report of the variety and richness of the forests of the entire State may be applied with scarce a modification to this tract, which includes both the extremes that gave its unique breadth of climatic and botanical characteristics to the whole. That is, there are about one hundred species of woods—more than in all Europe; of twenty-two species of oaks in the United States (east of the Rocky Mountains), nineteen are found here; all (eight) of the pines; four out of five spruces; all (five) of the maples; both of the wal-

nuts; three of the five birches; six of the eight hickories; and all (seven) of the magnolias; more species of oaks than in all the States north of us. It goes without saying that here is a source of business, of freights and manufactures capable of immediate and indefinite expansion and development. Of the twenty kinds of timber admitted to the ship-yards of New York, nearly all are found here. The following is a partial catalogue of the commercial timbers common to one or another section along this tract: Pine, six species; white pine; fir, three species; hemlock; juniper; cypress; red cedar; oak, fourteen species; hickory, six species; walnut, two species; chestnut; beech; black locust; maple, three species; ash, four species; elm, three species; cherry; holly; dogwood; gum, two species; sassafras; palmetto; magnolia (cucumber tree); persimmon; poplar; birch, two species; sycamore; tulip tree (poplar); linn (basswood); sixty-four species, valuable for their timber. Among these, a single species, the long-leaf pine, yields in timber and naval stores, products of $3,000,000 value annually; and the long-leaf pine belt is traversed by more than fifty miles of the C. F. & Y. V. R. R. There are many other trees and shrubs of less importance, or whose value consists less, or not at all, in their timber, but in their leaves or bark, as the sumac, sweet gum, cane, etc.; and in addition to these, several hundred species of medicinal plants are gathered for export to all parts of the world (such as ginseng, hellebore, etc.), amounting to many thou-

sand tons a year, chiefly from the mountain section. Thus it will be seen, that in these indigenous forest products are found the means and materials for large businesses and freights for an indefinite time; and the value of these resources, and the demand for them, increases rapidly year by year, as the accessible forest regions of the continent are more and more rapidly suffering exhaustion. The shops of Pittsburg, with their annual consumption of 50,000,000 cubic feet of timber, having exhausted the forests of several States, are already turning this way for their future supply; and so of Cincinnati and of Chicago, as the forests of Michigan and Upper Wisconsin swiftly disappear.

"*Cape Fear Section of Route.*— From the upper Cape Fear, above Fayetteville for 50 miles, will come large shipments of timber and naval stores, as heretofore. There are many hundreds of square miles of the long-leaf pine forests in this section yet to be opened to commerce. It will be seen, by reference to the United States Census, that this trade amounts to more than three millions per annum, and a large part of it is concentrated along the Cape Fear. The returns for 1879 give the shipments of naval stores from Fayetteville as aggregating 96,000 barrels.

"*Deep River Section.*— In this section the long leaf pine and *oak forests* meet. There are some fine bodies of the latter along the river bottoms and those of its tributaries, and all over the intervening ridges and hills, for a dozen miles above the Gulf; and with

the various species of oak are found other valuable woods—walnut, hickory and dogwood, etc., in abundance. A company from Baltimore are making arrangements to ship large quantities of the two latter woods this season.

"*Midland Section.*—This portion of the tract includes the upper part of Randolph and Chatham, a large part of Guilford and Forsyth, Stokes, Yadkin, Surry, Wilkes and Caldwell—a region of nearly as great extent, and of more varied and abundant resources, than some entire States. It contains wide stretches of the finest forests in their primeval state. They abound, in extraordinary richness, along the streams in the southern part of Guilford and along many of the intervening ridges, and on the upper waters of Haw River in the western and northern portions of the county; and again on the head streams of the Dan, on the flanks of the Sauratown Mountains, and in the valleys of the Yadkin and its numerous tributaries that come down from the slopes of the Blue Ridge. These will furnish immense quantities of white oak, and other species of oak, hickory, walnut, poplar, while the uplands and ridges and the spurs of the mountains abound in hickory, dogwood, yellow pine, chestnut and black locust. And above Patterson there are large forests of white pine.

"*Mountain Section.*—The *timber products* of this section are also of immense extent. The largest and finest cherry and walnut timber grows in these moun-

tain coves, with curled maple and black birch (or mahogany). I have seen here forests of cherry, and have measured trees of more than three feet in diameter, and clear of limb for 75 feet. And almost unbroken forests of the heaviest oak timber; and chestnut, poplar, hemlock, white pine, linn, black locust and birch, mantle cove, ridge and mountain slope, to the highest summits."

CURRITUCK. (200 sq. miles.)—Baelie, Aug. 28, 1882.—The navy yard at Portsmouth, Va., has long since absorbed all the valuable oak. The avaricious and insatiable saw mills, together with the desire of every man who could buy a pair of oxen and "Carry-Log," have demolished and transported nearly all of our pine; to such an extent have they carried on lumbering that many pieces or sticks will not measure 100 feet board measure. Holly all gone to the northern cities. Some cypress yet remains in inaccessible swamps. Juniper very scarce, but cheap buckets in abundance. This certainly looks like a gloomy report, but more truth than poetry. It is true we have some scattering small tracts of fair pine, but few indeed. The prevailing growth now that reaches the vision is pine—pine saplings, sweet and black gum, and occasionally some poplar and hickory. I cannot inform you with accuracy of the wooded acreage, but I presume I would not be far from correct to say three-fifths.—W. H. C.

DAVIE. (300 sq. miles.)—Farmington, August 29, 1882. We have the different kinds of oaks, white,

post, black and red oaks, hickory, poplar, pine, ash, gum, walnut, chestnut, dogwood, persimmon, etc. The prevailing growth is oak and short-leaf pine. The wooded acreage is about one-third—covered with oak and short-leaf pine.—G. W. J.

DAVIDSON. (600 sq. miles.)—Lexington, Sept. 30, 1882. —We have in our forests oaks, pine, persimmon, walnut, and all the hard woods. The oaks predominate, though pine is very abundant. Two thirds of the county in woodland.—J. H. W.

DUPLIN. (725 sq. miles.)—Faison, Sept. 27, 1882. —We have very little long-leaf pine left in the upper section of the county; steam mills and forest fires have thinned it out. In a few years we can with much difficulty get timber enough to keep up fences and furnish firewood. Ours is the cotton section of the county. There is a good deal of timber in the lower part of the county away from the railroad. We have quite a number of large swamps in the county, well timbered with short-leaf pine, ash, poplar, maple, cypress, etc.,—by estimation over 55,000 acres of good unimproved swamp land. Since the long-leaf pine has been used and burnt, the forest is covered with short-leaf pine, small oaks, and black jack.—W. E. H.

EDGECOMBE. (500 sq. miles.)—Old Sparta, Aug. 22, 1882. — Our forests are of long-leaf pine and cypress, the former largely predominating. Probably fifty per cent. of the land is in woods, but generally poorly timbered; yet there is a sufficiency of both

pine and cypress for home consumption. The Seaboard and Raleigh Railroad, now building a bridge across the Tar at Tarboro, have imported a large portion of their timbers from South Carolina, not that such stuff could not be had in this section, but it is not now so accessible.—E. C.

FRANKLIN. (425 sq. miles.)—Louisburg, Sept. 9, 1882.—We have oak — many varieties, pine, hickory, ash, willow oak, maple, elm, beech, birch, gum — several kinds, sycamore, cedar, holly, locust, mulberry, sassafras, some walnut—though not abundant, some cypress, and in fact all the varieties of forest growth found in the central portion of the State. The prevailing growth in the original forests in the northern and western portion of the county is oak, hickory, yellow pine, dogwood, etc.; in the southern and south-eastern portion of the county, added to these is the long-leaf pine. Old-field pine is abundant all over the county. About ten per cent. of the area of the county is in *original* forest of pine, oak, hickory, etc. There is a much larger acreage of *old-field* pine.—J. J. D.

FORSYTH. (350 sq. miles.)—Salem, Aug. 22, 1882. In some sections of our county there is considerable short-leaf pine, but the prevailing growth is oak, mixed with hickory and dogwood. We have some poplar, persimmon, etc. The chestnuts are dying out fast. Probably one third of the county is in forest, one third cut over and growing up in brush, old fields thrown out, and old-field pines, and one

third actually in cultivation. In these last years, timber has been cut very fast for building material, tobacco boxes, spokes and handles, and shuttle blocks, and especially as fuel for our growing towns, but I am happy to add that our "fence law" area is widening too, and the young growth on many an old hillside gives cheering promise for the future.—J. W. F.

GATES. (375 sq. miles.) — Gatlington, Sept. 20, 1882. — Our forests contain pine, three varieties: long-strawed, medium-strawed or ordinary, and the short-strawed or rosemary; oak, several varieties, named in order of the prevailing varieties — red, white, post, black jack, water, Spanish, turkey, chinquapin, and the over-cup; ash; gum, sweet, black, and papaw; poplar, persimmon, juniper, cypress, cedar, a sprinkling of mulberry, holly, maple, dogwood, sour-wood, elm, beech, birch, and some few others. The long-leaved pine is confined mostly to the sand banks bordering the Chowan River, though it is found to some extent wherever the land is sandy. It has all been cut, or nearly so. The prevailing varieties are the ordinary pine, oak (red and white), gum (sweet and black), ash, hickory.

I suppose fully three fourths of the area of this county is covered by forest, including old fields. There is a large quantity of pine timber and a good deal of oak. The pine, oak, and cypress are being rapidly cut and in a few years will all be gone.—J. J. G.

GASTON. (350 sq. miles.) — Gastonia, Aug. 23, 1882.—As to the kinds of timber in our forests, pine is the most numerous, both yellow and white. No long-leaf grows in our section. Our forests are about an equal mixture of all the different kinds of oaks, such as white, black, red, chestnut, Spanish, post, etc. There are also the pin and water oaks, which grow along the swamps and watercourses. The gum and black jack are found occasionally, but the larger portion of our forests is pine, and for the most part on the ridges. The most valuable land consists of hickory and dogwood, and occasionally the walnut. In the swamps, maple, ash, and birch are found. About three fifths of our land is yet forest, and a great portion of our poorest, worn-out old fields have grown up in *old-field* pines, and when cleared up produce cotton and wheat as well, if not better than new forest land. The supply of firewood timber is very plentiful, but valuable timber for rails, planks, shingles, etc , is becoming very scarce, and especially heart timber. Sap timber is inexhaustible, but the heart for rails, etc., is becoming so scarce that our county demands the fence law.—D. A. J.

GRAHAM. (250 sq. miles.)—Robbinsville, Aug. 27, 1882. — Our forest woods are walnut, poplar, chestnut, white oak, black oak, chestnut oak, red oak, Spanish oak and post oak, hickory, cherry, birch, linn, spruce pine, some yellow pine, and much white pine. Laurel and ivy are plenty in the mountain

section. The timber I have named is of a good and large healthy growth, from 30 to 70 feet to the first limbs, from 2 to 6 feet in diameter.—J. J. C.

GREENE. (300 sq. miles.) — Hookerton, Aug. 24, 1882.—Our forests consist mainly of pine. On the high dry lands the original growth is pitch or long-strawed pine; most of it has been boxed or bled, and consequently more or less damaged for lumber, but makes excellent fence. The slashes and low, flat lands have what we call slash or short-straw pine, which makes excellent building lumber for all purposes not too much exposed. The under or second growth on the ridges is oak. Our swamps have oak, ash, cypress, sweet gum, black gum, some hickory. Oak for timber is not very abundant. Cypress, pine, and gum are in abundance, though the cypress is not of the best quality. Walnut is very scarce. Our wooded acreage is about equal to the arable land. Say one-half our area is in wood; about two-thirds of this is covered with pine, mostly long-leaf. All of the second growth of pine is short-leaf; some of that makes good timber.—W. P. O.

GRANVILLE. (750 sq. miles.) — Sassafras Fork, Aug. 26, 1882.—In this county the prevailing growth is white and post oak, hickory, and pine. In the northern part of the county about three-fourths is in original growth; the balance about one-half.—R. O. G.

HALIFAX. (710 sq. miles.)—Scotland Neck, Sept. 18, 1882.—The timber in our forests consists of long

and short-leaf pine, cypress, oak, maple, ash and hickory. The prevailing growth is long and short-leaf pine, and the different varieties of oak. The wooded acreage is about two-thirds of the county, say about 270,000 acres, covered with every variety of pine, oak, maple, cypress, ash and dogwood. The number of acres in original forest growth of the different varieties of timber is believed to be about one-fifth or one-sixth of the wooded acreage.—R. H. S.

HARNETT. (550 sq. miles.)—Lillington, Oct. 10, 1882.—Long-leaf pine is the principal growth of our forests. We have some oak and hickory; very little walnut. On the west side of the county there are 40,000 acres (in large tracts) of large, merchantable pine, what we call "ship timber." At present it is not near enough the railroad to be very profitable, but the proposed road from Goldsboro to Salisbury will make it so. Besides this, we have 100,000 acres of pine suitable for saw mills.—B. F. S.

HENDERSON. (375 sq. miles.)—Edneyville, Sept. 15, 1882.—I send you a statement of the timber in this county. Common pine, white and spruce pine, oak, walnut, hickory, ash, chestnut, poplar, beech and locust. These timbers are all fine, large and tall. There has been in the last six months a large amount of locust pins shipped from this county and they are still shipping them.—R. E.

HAYWOOD. (750 sq. miles.)—Waynesville, Aug. 28, 1882.—We have an abundance of the following timbers: Black walnut, white oak, red and black oak,

poplar, ash, chestnut, hickory, cherry, linden, buck-eye, birch, black gum, dogwood, maple, and a great variety of other species. We have also an abundance of laurel and ivy, from which very fine rustic work has been and is being made. As to pine timber, we have quite an abundance of spruce pine, some yellow pine, and an enormous quantity of balsam. The prevailing growths of the county are white oak, chestnut, hickory and poplar.—E. P. H.

IREDELL. (600 sq. miles.)—Statesville, Aug. 26, 1882.—The kinds of timber in our forests are, oak (white, black, red, post, Spanish, chestnut and indeed all varieties), short-leaf pine (white, soft and yellow heart), hickory, dogwood, sour-wood, poplar, maple, beech, walnut (white and black), etc. The forests of this county show a very great variety of timber. The prevailing growth is oak, pine and hickory. About one-third of the county is woodland. Of the timber land about one-half is covered by oak timber of the different varieties.—J. P. C.

JOHNSTON. (700 sq. miles.)—Smithfield, Sept 7, 1882.—Of timber in our forests the principal kinds are pine, oak, hickory, ash, maple and gum. The long-leaf pine is the prevailing growth. The acreage covered by the prevailing species is, I suppose, about two-thirds.—J. P. W.

JACKSON. (925 sq. miles.)—Webster, Sept. 12, 1882.—At least four-fifths of this county is yet forest. The prevailing growth is oak. The varieties are red oak, Spanish oak, black oak, white oak and post oak.

Locust is found anywhere in the county and in great quantities in some places. Hickory grows promiscuously over the county, and it is very fine. Fine poplar is found in various parts. Buckeye, beech, birch, dogwood, ash, cucumber and others are found in the county.—W.H. H. H.

LINCOLN. (275 sq. miles.) — Macpelah, Aug. 28, 1882.—The timbers of our forests are short-leaf and old-field pine, all oaks of this region, dogwood, hickory, poplar, maple, cherry, walnut, beech and birch, linden, elm, ash, chestnut (mostly dead), sour-wood, sassafras. The prevailing growth is a mixture of pine and oak, with hickory in places; bottoms have poplar and maple. In places, dogwood and sour-wood are largely intermixed with prevailing growth. Two-thirds of the county is in woods; much of it second growth, having been cut for charcoal. Amount of pine lumber for building sufficient for present, but not over-abundant. Shingle timber is already scarce, and oak much used for this purpose.—W. A. G.

MOORE. (825 sq. miles.)—Sanford, Sept. 8, 1882. — The kinds of timber in the forests of this county are as follows: Long and short leaf pine; white, red, and post oak; hickory, dogwood, with smaller quantities of juniper and ash. The prevailing growth is long-leaf pine. The wooded acreage is about 50 per cent.; about 40 per cent. long-leaf pine, and about 10 per cent. of all others mentioned above.—J. D. McI.

MONTGOMERY. (575 sq. miles.) — Troy, Aug. 30,

1882. — The timbers of our forests are: Pine, long and short leaf, oak, hickory, dogwood, maple, ash, poplar, and walnut. Long-leaf pine, oak, hickory, and dogwood prevail. The wooded acreage is 250,000, of which the long-leaf pine occupies about 80,000, the rest being taken up by oak, hickory, and dogwood, with the other minor kinds mentioned.—C. C. W.

MADISON. (450 sq. miles.) — Marshall, Aug. 25, 1882. — The kinds of timber are poplar, white oak, white pine, hickory, ash, walnut, and some red oak and yellow pine. The prevailing growths are hickory, poplar, white oak, and ash. The wooded acreage is about 80 per cent., and the acreage as covered by the prevailing growth about 75 per cent. In the mountains you find many parts covered with buckeye, linn, beech, dogwood, and cherry. The walnut and cherry are being cut very fast and shipped to eastern markets.—W. W. R.

MACON, CLAY, CHEROKEE, GRAHAM, HAYWOOD, JACKSON, SWAIN. (3,910 sq. miles.)—Franklin, Aug. 26, 1882.—I give statement of timbers growing in Macon County. Black oak, Spanish oak, white oak, post oak, chestnut oak, water or shingle oak; chestnut, hickory (both red and white), poplar, linn, ash (both black and white), cucumber (two varieties), maple, black and white walnut, cherry, spruce pine or hemlock, common black pine, white pine, black jack, sycamore, birch, holly, Peruvian tree, dogwood, sourwood, persimmon, sarvis, black locust, yellow locust,

cedar (scarce), buckeye, black gum, slippery elm, beech, iron-wood, wild plum, sassafras, chinquapin, crab-apple. Of these timbers, the oaks are more generally distributed through our forests than any other; then chestnut, the hickory and poplar, etc. I have not the means at command to determine the percentage of uncleared forest as compared with the lands cleared and in cultivation, but I am inclined to believe that five-sixths of the whole area of the county are in unbroken forests. The oaks prevail throughout the whole territory of the county. Clay, Cherokee, Graham, Swain, Jackson, and Haywood produce similar growths; and to the list herein given you may add balsam for the counties of Swain, Jackson, and Haywood.—C. D. S.

Hayesville, Clay County, May 8, 1882. — Five counties in the extreme western corner of North Carolina have since the Atlanta Exposition become centres of attraction to geologists, to metallurgists, and to all who have either a scientific or a practical knowledge of mines and mining. These are Swain, with its beautiful marbles of many colors; Graham, abounding in free gold precipitated next the soft slate; Cherokee, with its belts of iron, limestone, marble, and steatite, and its mines of gold, lead, silver, and mineral paint. The remaining two are Clay, in which gold, corundum, mica, asbestos, soapstone, and many gems are found; and Macon, with its ores of copper and its mines of corundum, mica, asbestos, graphite, limestone, and a large variety of

precious stones. These are the most abundant minerals of this district. Associated with them are many others belonging to the curiosities of geology, but without commercial value. Iron is much more abundant than any other of the useful metals, but gold is much more widely disseminated. . . . . In a former letter some reference was made to the timbers of this country. An extended tour among these mountains since then has more than confirmed my opinion of the extent and value of these forests. I have seen colossal pines, chestnuts, and oaks; hickory, maple, and beech trees four feet in diameter, and poplars thirty-six feet in circumference. There are spots in these mountains where the wild cherry attains a diameter of six feet and the sassafras four. The yellow locust also grows to be a large tree. A log of it lying across a branch where it has been used as a foot log the last thirty years seemed to be as sound at the heart as when it was felled. Persimmons and dogwoods large enough for shuttle blocks are to be seen near all the streams. The local consumption of timber is inappreciable except where land is cleared for cultivation: then the wasteful practice of girdling and subsequent burning is employed. When track-laying begins, cross ties will be in demand. A market will be opened for timber suitable for trestles and bridges, and the work of forest destruction will be fairly inaugurated. When the road is completed, iron furnaces will be built and charcoal pits started. The bark of the chestnut and

oak will be sent to the Chattanooga tannery, the hickory will be turned into spokes and tool handles, and the poplar sawed into planks. At present prices, and with the certainty of an early demand, no more profitable investment offers for idle capital than the forest land contiguous to these railroads in Swain and Cherokee counties. I have not seen a tract on the line indicated that will not be worth at least double its cost within the next two years, and many of them will bring a much higher percentage, because of their location and their adaptation to tillage.—MR. PARDEE, *Editor New Haven (Conn.) Palladium.*

MITCHELL. (250 sq. miles.)—Bakersville, Sept. 8, 1882.—We have in this county the following kinds of timber of importance: White oak, walnut, poplar, ash, hickory, cherry and white pine. The latter exclusively in the eastern part of the county. The greater part of the county is timber land. The acreage of the different kinds would be in about the following order: first, white oak; second, white pine; third, poplar; fourth, ash; fifth, hickory: sixth, walnut; seventh, cherry.—J. W. B.

NASH. (525 sq. miles.)—Nash County, Sept. 11, 1882.—Northern and western portions of Nash: black, post, Spanish and white oaks, short-leaf pine. Eastern and Southern parts: long-leaf pine. Low lands: cypress, gum, poplar and maple—undergrowth, dogwood, principally. I have no means to ascertain the wooded acreage It is very different in different portions. Generally about one-fourth to one-half under

fence, except in large tracts, then a much less per cent. under fence. Small tracts more under fence. The remainder is in old worn-out fields with the original growth about half and half. In some sections large bodies in original growth; some of oaks and some of pine; but every year the acreage under fence is rapidly increasing and land rising in value.—J. W. B.

New Hanover, Pender, Duplin, Wayne, Wilson, Edgecombe, Nash, Halifax. (Area, 4,360 sq. miles.) *Route of Wilmington and Weldon Railroad.*—Wilmington, Sept. 8, 1882.—The prevailing growth of timber from Wilmington to the Neuse river is long-leaf pine on the high lands, slash pine, with a sprinkling of scrub gum and maple, on the flats or low lands, with a little white oak. On the higher ridges there is a little red oak. The long-leaf pine in the neighborhood of the railroad has been used for turpentine and tar, and most of the oak timber has been gotten for staves. In the swamps there is a great deal of black gum, sweet gum, maple, ash and hickory, some little oak, the greater part being black gum, with occasional low places of cypress. Very little walnut.

The same may be said from Neuse river to Fishing Creek, with an increased growth of red oak and hickory. Most of the long-leaf pine has, like the lower part, been exhausted. From Enfield to Weldon is short-leaf pine, in the swamps a good deal of beech, papaw, gum, and a considerable amount of small oak and hickory.

I understand that on the west side of the road from Wilmington to Goldsboro, after a few miles, there are large quantities of valuable pine which has been bled for turpentine, and after you pass Goldsboro a great deal of very valuable timber a few miles from the road (long-leaf pine).

As soon as you strike the red lands in Wilson, Nash and Halifax, you find considerable quantities of oak. Running from Fishing Creek in the direction of Raleigh there is a very large belt of long-leaf pine of first-class quality, varying from 3 to 6 or 8 miles wide, running in the direction of Raleigh. When it reaches the Little River country it seems to run in a direction further south, passing below Clayton, thence through the State, passing the lower edge of Wake and through Johnston county, through the most of Harnett, Cumberland, eastern part of Richmond and Robeson, being a great deal of valuable saw-mill timber, some of which has been bled, some not. How far the line goes west of this I do not know, but my recent explorations of the line from Wilson to Shoe Heel show a great deal of valuable pine timber and some valuable white oak.

The belt of timber running from Fishing Creek up towards Peach Tree, on towards Watson's Mill on the Neuse, is one of the finest sections of timber I know.

In the Scotland Neck country, in the dividing ridge between Beach Swamp and the waters of the Roanoke, thence continued on to a point between Tarboro

and Williamston, there is another valuable belt of long-leaf pine timber.

On the Roanoke there are localities in which young walnut seems to spring up along the hedge rows as old-field pine does in other localities. I judge from the manner in which it springs up that it could be grown with ease in this district. Also in many other sections walnut could be grown.

It is not in my power to give you the wood acreage and the acreage covered by prevailing species. You will find the timber indicated more by geological formation. As soon as you get into red or rocky lands the long-leaf pine disappears, and oak and hickory take its place. As you pass the Granite Falls there are gum swamps and cypress swamps. A description of one is a description of all. A description of one section of long-leaf pine country is nearly a description of all.

The long-leaf pine extends above the line of Granite Falls on Fishing Creek, Neuse River, Smiley's Falls, and the Falls in the Yadkin, varying at different points. Not a great deal of long-leaf pine in the secondary formation—it is principally confined to the tertiary. The various river bottoms of the Neuse, the Cape Fear, the Tar and the Roanoke, never had long-leaf pine on them This soil seems to have been made from settlings from the up country. What there is in the tertiary formation that produces long-leaf pine, and what there is in the secondary formation that precludes its growth except on the ridges, I cannot tell.—R. R. B.

NORTHAMPTON. (525 sq. miles.) — Rich Square, Sept. 7, 1882. — We have here almost every tree known, but principal growth is pine and oak on the high lands, with gum and cypress in the swamps. The hills or high lands are also interspersed with hickory, walnut, dogwood, and maple, and many other varieties in less quantity. I suppose one half the county is in forests, and one half that is thickly set in long-leaf pine. In the lower end of the county we have large quantities of the various kinds of oak and hickory, some walnut, sap pine (known as short-leaf), maple in abundance, etc. Then there are three large swamps in or partly in the county, which abound in magnificent cypress trees and the different kinds of gum.—J. C. J.

ORANGE. (675 sq. miles.) — Hillsboro, Sept. 8, 1882. — Our forest timbers are oak, hickory, gum, cedar, pine, elm, maple, walnut, sycamore, beech, birch. The prevailing growth is oak. One third of Orange is in forest, mostly oak.—J. W.

ONSLOW. (725 sq. miles.) — Richlands, Aug. 22, 1882.—The long-leaf pines are the principal growth. There is a large quantity of waste or barren poor piney woodland, interspersed with strips of pocoson which have cypress and juniper. On the rivers and creeks are fine poplar, dogwood, holly, beech, maple, and sweet gum. The old fields are covered with spruce or short-straw pines. Elm, white oak, red oak, and hickory abound in the swamps and low ground, and the plantations have on their edges per-

simmon trees, plum and mulberry. There are some walnut trees, on the farms principally, and a few in the woods. There is at least sixty per cent. of the acreage of forest in the pine woods,—in many places splendid timber of the yellow long-leaf pine for saw-mills. The cedar tree also is interspersed all over the county, and may be found in the swamps and on plantations. Ash of the finest quality and in great abundance prevails in the low grounds and on the creeks and rivers, with a large quantity of sugar maple. New River, in Onslow, has timber in abundance on it, and steam saw-mills would do a good business; could saw pine, cedar, gum, juniper, oak, ash, hickory, holly, beech, dogwood. There is an abundance of willow in the low grounds.—J. H. F.

Pamlico. (875 sq. miles.) — Stonewall, Sept. 1, 1882.—We have all kinds of trees in our forest that are known in the State except chestnut. The prevailing growth is on our outlands, long and short straw pine, with oak (red and white), hickory, holly, etc.; and in the swamp, yellow poplar, sweet and black gum, ash, juniper, and the over-cup and chestnut oak, etc. The wooded acreage of our county is at least nine-tenths of the whole.—J. S. L.

Pasquotank. (240 sq. miles.) — Elizabeth City, Aug. 30, 1882. — There are two distinct classes of timber in north-eastern North Carolina—swamp timber and upland timber. The most valuable swamp timber is juniper and cypress, vast quantities of which have been and are still being cut and carried

to market. Most of it is manufactured out of the State. The prevailing growth on the highlands is pine. Immense quantities of this have also been cut and moved out of the State to be manufactured, but no inconsiderable quantity is manufactured in the State. In this county there are about fifteen mills for the manufacture of pine lumber. There are large quantities of timber still standing on the low and high lands, great as has been the drain during the past fifteen years. We have an abundance of wood of different kinds—oak, maple, sweet gum, ash, hickory, holly, poplar, etc., on the uplands, and bay, black gum, laurel, etc., in the swamps. Nearly or quite one-half of the area east of Roanoke River in this State is still wild; probably one-fourth of that whole territory is swampy and not susceptible of cultivation.—F. V.

PENDER. (917 sq. miles.) — Burgaw, Aug. 21, 1882.—We have pine, oak, hickory, maple, sweet and black gum in abundance, and in several sections birch, willow, and walnut in quantities. The prevailing growth is long-leaf pine, oak, hickory, and maple. The wooded acreage is about two-thirds of the entire quantity. Number of acres in the county, 353,794, two-thirds of which is wooded land. The long-leaf pine covers about one-third of entire number of acres, or half of the wooded land, amounting to 117,931 acres. The other half is about equally divided in the other growths, such as hickory, gum, etc.—W. T. E.

PERQUIMANS. (225 sq. miles.) — Hertford, Sept. 29, 1882. — We have in this county pine, cypress, juniper, gums, oak, ash, beech, with a sprinkling of hickory, walnut, maple, dogwood, holly, and poplar. Long-leaf pine is the prevailing growth of the high lands, and cypress and juniper of the swamp lands. Our pine lands have been in a large measure denuded of late years; 400,000,000 feet of pine timber have been carried from this county to Norfolk and Baltimore in the log in the last ten years. There still remain about 10,000 acres uncut of pine, and about the same quantity of cypress and juniper.—T. G. S.

PERSON. (400 sq. miles.) — Winstead, Sept. 20, 1882.—We have in our original forest in this county all of the oaks, hickory, short-leaf pine, poplar, some walnut, beech, birch, sweet and black gum, sourwood, dogwood, etc. Our second growth consists mainly of pine, the gums, persimmon, elm, etc. This county is twenty miles square, and I suppose the original wooded acreage to be one-eighth of the whole; the second growth, one-half of the whole. Original growth divided about as follows: pine, one-fourth; oak, one-third; hickory, one-eighth; the remainder being poplar, beech, birch, walnut, etc.; the second growth mainly pine, which makes fine building material, etc.—A. J. H.

PITT. (825 sq. miles.)—Pitt County, Oct. 16, 1882. — The kinds of timber are pine, cypress, oak, gum, poplar; the prevailing growth, pine and cypress. The wooded acreage I can only estimate from the lands

under my control — 8,000 acres, divided into three distinct farms. One-fourth is cleared; three-fourths in woods. Of the wood, one-half, perhaps three-fourths, is pine.—J. H. S.

POLK. (300 sq. miles.) — Lynn, Aug. 28, 1882.— Polk County is rich in timber. Her lands on the south side of the mountains are very fine. On all low and flat lands, native short-leaf pine predominates; some oak and hickory. On the mountain sides we have fine walnut, ash, chestnut, poplar, maple, locust, buckeye. One-half of the county is mountain or fine kinds of wood. One fourth of the land in Polk is cut off and cleared.—D. B. M.

RANDOLPH. (728 sq. miles.) — Ashboro, Sept. 12, 1882. — Kinds of timber are oak, pine, hickory, dogwood, cedar, maple, gum, walnut, ash. The prevailing growth is oak and short-leaf pine. Wooded acreage, two-thirds of the county. About five-sixths of the wooded acreage is covered by oak and pine in very nearly equal proportions. The northern part of the county is chiefly oak, and in the southern part pine prevails.—J. A. B.

RICHMOND. (875 sq. miles.) — Rockingham, Aug. 25, 1882. — I estimate the area, in acres, as 500,000. Of this, probably 160,000 are devoted to agriculture. Nine-tenths of the original growth was long-leafed pine. Indeed all the county, except a narrow strip on the Pee Dee—in all not over sixty square miles—was of that species. In that small territory, and in the immediate vicinity of the streams which flow into

that river, there is still left some oak and hickory, but not enough for commercial purposes. It may be said, therefore, that our only timber in excess of local demand is the long-leafed pine. Most of this—say nine-tenths—has been boxed for turpentine, and thus to some extent damaged in its timber and lumber qualities. We have yet, especially off the line of the railroads, enough to make hundreds of millions of feet. The best and most extensive body of long-leafed pine, within my knowledge, is in Montgomery County, too far yet from transportation to be of much commercial value.—W. L. S.

ROWAN. (495 sq. miles.) — Salisbury, Aug. 21, 1882.—We have in our forests oak of all kinds, hickory, short-leaf pine, ash, black walnut, poplar, soft maple, elm. The prevailing growths are post, red, and Spanish oak; plenty of short-leaf pine for home use; other kinds of timber mixed very generally; black walnut and hickory in abundance. One-third to one-fourth of the county is in timber, of which the different kinds of oak will make from one-half to two-thirds; pine, one-half of the balance.—L. B.

ROCKINGHAM. (550 sq. miles.)—Leaksville, Sept. 9, 1882.—Our county abounds in oak, pine(short-leaf), hickory, walnut and dogwood. One-third of the county is in cultivation; one-third in original forest; one-third waste land, being rapidly improved by old-field pine.—J. P. D.

ROBESON. (1150 sq. miles.)—Shoe Heel, Sept. 25, 1882.—The prevailing growth of our forests is long-

leaf pine, both yellow and pitch pine. In our swamps (of which we have a considerable quantity) black gum and cypress prevail, with some oak and ash. The large timber accessible to the navigable streams and railroads has been cut off, but there is still a very large amount of timber suitable for lumber all over the county. There are many large areas of large pine timber remote from the streams and railroads yet untouched, that will, when we have railroad facilities, afford an immense amount of timber and lumber.—M. M.

RUTHERFORD. (475 square miles.)—Island Ford, Sept. 11, 1882.—We have in this county white oak, red oak, black oak, post oak, live oak, chestnut oak, in fact nearly all the oaks; two kinds of hickory—white and the common hickory, black walnut, short-leaf or yellow pine and (as fine as you ever saw and a plenty of it) hemlock near the mountains, poplar, ash, birch, beech, locust. About three-fourths of the acreage of the county is in timber yet.—J. L. M.

SAMPSON. (850 sq. miles.)—Clinton, Oct. 20, 1882.—The kinds of timber are long and short-leaf pine; water, red, Spanish, white, black-jack oaks; hickory, poplar, gum—sweet and black, dogwood, persimmon, cedar, elm, juniper, cypress, walnut. The prevailing growth is long-leaf pine. The wooded acreage about 65 per cent., and about the same per cent. of that covered by long-leaf pine.—E. T. B.

SURRY. (500 sq. miles.) Elkin, Sept. 11, 1882. The prevailing growth is white, red, black, Spanish

and chestnut oaks, yellow or short-leaf pine, ash, walnut, hickory, beech, birch, mahogany, chestnut, maple, poplar, etc. Wooded acreage is about three-fourths of the county, and one-half of whole county is in oaks, pine, hickory, etc.—R. R. G.

TRANSYLVANIA. (440 square miles.)—Zachary's, Sept. 14, 1882.—This county from north to south is 34 miles; from east to west, 29 miles. The valley of the French Broad is from one to five miles wide, and about 20 miles long within this county. With the exception of said valley (and it has a great deal of young oak timber), the county is almost one unbroken forest. There is an abundance of the various kinds of oak, chestnut, hickory, poplar, white and spruce pine, and in some portions good yellow pine, some walnut, cherry, beech, mountain birch, locust (in abundance), linn, buckeye, etc., with all the various kinds of small timber peculiar to a ridge country.—J. Z.

TYRRELL. (325 sq. miles.)—Tyrrell County, Oct. 3, 1882.—Our forests are of long-leaf pine, oak, juniper, gum, ash and cypress. The wooded acreage is at least 75 per cent., 50 per cent. of juniper and cypress; 25 per cent of pine and oak.—W. H. H. C.

WAKE. (1,050 sq. miles.)—Raleigh, Oct. 27, 1882.—A greater variety of timber trees are to be found in Wake County than in any other county in the State. In point of value the long-leaf pine comes first, covering at least one-third of the area of the county, and extending from the Johnston to the Chatham line,

and from Harnett to within three miles of the City of Raleigh. Short-leaf pine is the prevailing growth in nearly every other part of the county. Cedar pine grows on Buffalo Creek, and cypress and juniper abound on Little River, Buffalo and Moccasin. Sycamore, walnut, oak and hickory are the spontaneous growth of all parts of the county. Every known variety of oak is to be found in its borders. Large white oaks suitable for ship building are abundant on all the tributaries of the Cape Fear and the Haw. Every known variety of oak can be found in its borders. Hickory, black and red oak grow spontaneously.

I was once riding in a park of three hundred acres belonging to an English member of Parliament; I observed that all the oaks were post oaks, and so remarked to him. He replied, "Oh! I can show you *three* varieties." I told him in my town in America I could point him out twenty varieties of red oak alone. This he evidently thought a mistake, and on my return I sent him twelve varieties of red oak acorns found in the yard of Dr Hogg and in Capitol Square. I sent in the same package, also, acorns of the chestnut and white oaks, and in acknowledging the receipt of the same he said: "The great variety of Quercus Rubra is marvellous, some of them must be hybrids, but the acorns of the chestnut and white oaks have attracted the most attention on account of size. I have divided them with the Earl of Ellesmere, who has caused them to be carefully planted."

Many trees, such as olives, English walnuts and pecans, grow well in North Carolina. The pecan grows luxuriantly, and every farmer in the State ought to plant the nuts on his farm. They grow very vigorously in all parts of the State, and particularly so in the alluvial soil of the east, and every nut planted in November or December will germinate. The trees are much valued on the Mississippi for fattening hogs. I have a tree in my yard that at eighteen years of age bore five bushels of nuts. The nuts sell readily for twenty cents a pound, and as a crop for profit I think them well worthy of consideration.—R. B. H.

WARREN. (450 sq. miles.)—Ridgeway, Sept. 9, 1882.—The prevailing growths of our forests are pine (short-leafed), and oak (white, red, Spanish and post); other growths are dogwood, hickory, gum, walnut, etc. The acreage in forest is 55 per cent., as follows; pine 30 per cent., oak 25 per cent.—P. H. A.

WAYNE. (550 sq. miles.)—Fremont, Sept. 6, 1882. —We have in this county, oaks, hickory, gum, ash, mulberry, dogwood, walnut, etc., in small quantities; long-leaf and short-leaf pine the prevailing growth. About 40 per cent. of the county is woodland, 25 per cent. in pine timber.—W. E. F.

WILSON. (350 sq. miles.)—Stantonsburg, Sept. 4, 1882. — Our forests are principally pine, with oak, hickory, poplar, and some walnut. The prevailing growth is the long-leaf pine, except on Toisnot Swamp and Big Contentnea Creek, where are oak,

hickory, poplar, and some short-leaf pine. There is also sweet gum, black gum, and dogwood, ash, etc. I think about sixty per cent. of the county is in forest, forty per cent. cleared. Of the sixty per cent. in forest, the long-leaf pine covers seventy, and the other kinds mentioned the remainder. The timber sawed into lumber is ninety per cent. pine. The same remarks would apply to the counties of Greene, Wayne, a part of Nash, Johnston, and Edgecombe, except that the latter is about equally divided in forestry and cleared.—G. W. S.

WATAUGA. (475 sq. miles.) — Shull's Mills, Aug. 31, 1882.—The forests of Watauga County are very heavily wooded, and originally covered the whole surface except the rock cliffs on the mountains and the beds of the rivers. They now include about four-fifths of the acreage of the county. The prevailing growths are oak, chestnut, poplar, hickory, maple, sugar tree (or sugar maple), hemlock (or spruce pine), white pine, cherry, ash, linden, cucumber, buckeye, gum, birch (or mountain mahogany), beech, walnut, sour-wood, dogwood, etc. The first eight are the most abundant. All the forest growths of the county are so mixed together that I cannot give a reliable estimate of the acreage of each. The prevailing growth depends very much on the exposure and elevation of the surface, and the surface is so varied that almost every square mile of the county has a considerable variety of elevation and exposure, and consequently of prevailing growths of timber

on the different portions of it. Since the railroad reached Cranberry the lumbermen have invaded the county, and secured most of the cherry trees at almost nominal prices. But there will be enough valuable timber of many kinds in the county to furnish heavy railroad freights for many years.—W. W. L.

WAYNE, JOHNSTON, WAKE, DURHAM, ORANGE, ALAMANCE, GUILFORD, DAVIDSON, ROWAN, CABARRUS, MECKLENBURG. (Area, 6,351 sq. miles.) *Route of the North Carolina Railroad.*—N. C. R. R., Sept. 25, 1882.—Beginning at Goldsboro, the upper edge of Wayne, through Johnston to the lower edge of Wake County, you will find the long-leaf pine to be the prevailing species of timber on the uplands, mixed with some oak and hickory, mostly red oak and Spanish oak. On the rivers and creeks you will find it more extensively grown with white oak, sweet gum, black gum, poplar, and cypress of large size. Through this section about one-half the acreage is yet in forest, mostly of the original growths. Upon some of the uplands once in cultivation and since turned out, has grown up the old-field pine, which soon covers the lands with a thick growth of timber.

From the lower edge of Wake County, through Durham County, to the lower edge of Orange County, you will find the white oak and post oak, mostly on uplands, to be the prevailing growth, mixed with what is termed the rosemary pine, with a sprinkling of the long-leaf pine, in some places as far up as sixty-five miles from Goldsboro. The rosemary pine ex-

tends as far up as eighty miles from Goldsboro. On the uplands and on the rivers and creeks through this section you find it more extensively grown with poplar, sweet gum, maple, cypress, hickory, and some black walnut, ash, etc. The acreage in this section is about half in forest, mostly of the original growths. Dogwood and sour-wood grow very extensively in some parts of this section on the uplands, creek and river bottoms.

From the lower edge of Orange County to the upper edge of Alamance County to Company Shops, you will find the post oak and white oak still in most places to be the prevailing species both on up and lower lands, mixed with red oak, black oak, hickory, ash, maple, sweet gum, walnut, dogwood, and sour-wood. Cedar grows somewhat in this section, though not generally of very large size. The acreage is not quite half in the original forest, the lands having been more extensively cleared, and the old-field pine not growing up so readily on these red lands as in more sandy sections.—W. P. R.

Greensboro, October 14, 1882. — In Alamance County, west of Shops, the kinds of timber are oak, short-leaf pine, hickory, sweet and black gum, dog-wood, maple, and poplar. The prevailing growth is of oak and hickory. The wooded acreage is about one-half of the original entire acreage. The acreage covered by prevailing growth is about three-eighths of original entire acreage.

In Guilford County the kinds of timber are oak,

black jack, hickory, poplar, sweet and black gum, maple, and second growth pine. The prevailing growth, oak, black jack, hickory. The wooded acreage is about three-eighths of the original acreage of forest. The acreage covered by prevailing growth is about one-fourth of the original acreage of forest.

In Davidson County the kinds of timber are oak, black jack, short-leaf pine, hickory, gum (sweet and black), maple, elm, poplar, and dogwood. The prevailing growth, oak, short-leaf pine, and black jack. The wooded acreage, about one-half of the original forest acreage. The acreage covered by prevailing growth is about one-fourth of original acreage of forest.

In Rowan County the kinds of timber are oak, hickory, second growth pine, short-leaf pine, dogwood, maple, sweet and black gum, poplar, and elm. The prevailing growth, oak and short-leaf pine. The wooded acreage is about one-fourth of original forest acreage. The acreage covered by prevailing growth is about one-eighth of original forest acreage.

In Cabarrus County the kinds of timber are oak, short-leaf pine, hickory, second growth pine, dogwood, maple, sweet and black gum, elm, poplar, and persimmon. The prevailing growth, short-leaf pine, oak, and second growth pine. The wooded acreage is about one-half of the original forest acreage. The acreage covered by prevailing growth is about one-fourth of original forest acreage.

In Mecklenburg County, the kinds of timber are

oak, black jack, and second growth pine. The prevailing growth, black jack and second growth pine. The wooded acreage is about one-fourth of original forest acreage. The acreage covered by prevailing growth is about one-eighth of the original forest acreage.—W. H. P.

WAKE, CHATHAM, MOORE, RICHMOND. (Area, 3,575 sq. miles.)—*Route of Raleigh and Augusta Railway.*—Cary, Aug. 9, 1882.—Wake County. Kind of trees are pine, oak, hickory, gum, maple, poplar, and dogwood. The prevailing growth is about equally divided between pine and oak. Acres covered by the prevailing growth, about one-fourth.

Chatham County. Kind of trees about the same as in Wake. Prevailing growth, pine, oak, and hickory. Acres covered by prevailing growth, about one-third.

Moore County. Kind of trees, pine, a few oaks, and hickory; gum, poplar, cypress, juniper, and black jack. Pine largely prevailing. Acres covered by prevailing growth, three-fourths.

Richmond County. Kind of trees, oak, poplar, gum, cypress, juniper, black jack, and pine; the last-named largely prevailing. Acres covered by prevailing growth, about two-thirds.—H. P. G.

UNION. (650 sq. miles.)—Monroe, Sept. 8, 1882.—Our forests abound in short-leaf pine, hickory, black, red, and white oak, with some walnut. The wooded acreage is about one-third of the county.—J. D. S.

VANCE.—Henderson, Aug. 25, 1882.—Pine (short-

leaf), oak, hickory, poplar, gum, and dogwood in our forests. In original forest, about ten per cent. of the county; in pine, twenty per cent.—E. G. B.

YADKIN. (328 sq. miles.)—Huntsville, Sept. 4, 1882.—The kinds of timber in our forests are principally white, black, post, red, and Spanish oak, hickory, pine, black and sweet gum, some maple and sycamore, some black walnut, poplar in abundance; also ash, dogwood, sour-wood, and different varieties of elm. Oak is the prevailing growth. Fifty per cent. of the land is in woods. Worn-out lands are covered with old-field pine. Lands that were worn out thirty years ago, which were grown up in pine, are now growing up in oak, the pines dying out. Plenty of all kinds of timber named in this county for all purposes for which such timber is used.—T. L.

LONG-LEAF PINE SUPPLY.—Forestry Bulletin No. 8, from the United States Census Office, gives the amount of merchantable pine—Long-leaved Pine (*Pinus Australis*)—standing in fifteen counties as follows:

Bladen,	288,000,000	feet
Brunswick,	141,000,000	"
Chatham,	448,000,000	"
Columbus,	288,000,000	"
Cumberland,	806,000,000	"
Duplin,	21,000,000	"
Harnett,	486,000,000	"
Johnston,	563,000,000	"
Moore,	504,000,000	"

New Hanover,	96,000,000 feet
Onslow,	34,000,000 "
Robeson,	864,000,000 "
Sampson,	602,000,000 "
Wake,	48,000,000 "
Wayne,	40,000,000 "
Total,	5,229,000,000 feet

APPENDIX A.

SWAMP LAND TIMBER IN DUPLIN AND PENDER. —Kenansville, April 4, 1883.—Without doubt, Duplin and Pender Counties have the largest known bodies of cypress timber this side of the lower Mississippi bottoms.

Citizens own in Duplin County of pure mud swamps in square miles, ...	80
State owns in Duplin County of pure mud swamps in square miles, ...	25
Making in all, ...	105

At least 30 miles square of this swamp land may be considered as cypress timber; and about the same amount is gum; there are about 5 miles square, each, of sweet gum and ash. The remainder is made up of a growth of poplar, maple, spruce pine, hickory, birch, holly, elm, oak and hornbeam.

In this county (Duplin) there are large bodies of cork gum, known as "*tasteless wood*," very valuable for packing-boxes for bread, cakes and candies; it is similar to the Mississippi river bottom gum, used in St. Louis, Mo., for packing crackers for shipment to India.

A portion of the swamps of Duplin and Pender are remarkable for being underlaid with marl; and

in some instances it is only two or three feet below the surface.

In Pender County, east of the Wilmington & Weldon Railroad, owned by citizens, of overflowed land, in square miles, ...	31
Owned by the State, ...	175
	206

In the interior of Holly Shelter Pocoson there are known to be drain bottoms or basins extending nearly across the entire length of the pocoson, which is 40 miles long; these basins are covered by a fine growth of cypress timber. About two thirds of this pocoson is in Pender County, the remainder in Onslow. But it would be impossible to give a correct estimate of the area of this great interior basin of timber; as this pocoson has never been fully explored, nor even crossed except at the most accessible points.

There are also great bodies of timber, viz.: cypress, oak, ash, poplar, maple, sweet gum, holly and sour gum, in the basins of Angola Pocoson and the North-East River Swamp; this river swamp extends across the entire County and is from one to two miles wide.

In this swamp, maples 3 feet through are common; holly is found $2\frac{1}{2}$ feet in diameter; sweet gums from 8 to 9 feet through are found, and occasionally swamp pines are found that are from 5 to 7 feet in diameter.

It is more than probable that if all the cypress timber in Pender County was separated and laid down in one body that it would make (60) sixty square

miles of this one kind of timber that is so valuable. And yet, all this great mine of wealth is almost literally hermetically sealed to the outer world by reason of overflow and the perpetual miry condition of the swamps; although so easily reached by only a little labor and effort.

From time immemorial it has been known as a remarkable fact that hogs raised and kept in Holly Shelter and Angola Pocosons are always free from all kinds of diseases, even the fatal hog cholera: they feed upon a starchy, tuberous root, called by the natives tuckahoe, and get very fat in the fall when the root fully matures; it is supposed by many that this root being eaten by the hogs prevents cholera.

In an isolated spot in east Duplin, a beautiful specimen of climbing fern has been found, which is an evergreen and grows to the height of 4 feet; it belongs to the family of climbing ferns found in the mountains of Japan.

There has been found in Pender County a tree orchid new to North Carolina. In the same county, in the interior of Holly Shelter Pocoson, there has been found a floating plant heretofore only found in Australia.

It is more than probable that there are yet other strange and rare plants to be found in the North-East River basin.

Dr. A. E. Anderson of Wilmington first used Creeping Huckleberry, V. crassifolium, [see Hale's Forestry, page 142,] in the practice of medicine; but

now some of the largest druggists in the United States are using an extract from this plant in a preparation they put up for the dropsy. The medical virtue of this plant corresponds with that of buchu; and could very properly be termed North Carolina buchu.—W. L. Y.

THE

Farms of North Carolina.

ACRES OF LAND IN FARMS IN EACH COUNTY OF NORTH CAROLINA, ACCORDING TO THE CENSUS OF 1880.

County.	Improved.	Unimproved.
The State, . . .	6,481,191	15,882,367
Alamance, ...	77,799	129,269
Alexander, ...	48,985	97,680
Alleghany, ...	74,747	75,278
Anson, ...	90,061	192,787
Ashe, ...	117,174	169,988
Beaufort, ...	44,887	228,538
Bertie, ...	85,504	202,533
Bladen, ...	40,563	310,501
Brunswick, ...	19,399	307,680
Buncombe, ...	99,602	241,940
Burke, ...	44,496	140,623
Cabarrus, ...	90,514	110,129
Caldwell, ...	47,405	160,174
Camden, ...	36,757	66,901
Carteret, ...	22,472	69,660
Caswell, ...	89,885	147,249
Catawba, ...	78,080	141,593
Chatham, ...	126,940	302,306
Cherokee, ...	30,668	152,041
Chowan, ...	36,052	49,180
Clay, ...	17,691	71,954
Cleveland, ...	87,691	176,248

County.	Improved.	Unimproved.
Columbus,	39,031	363,443
Craven,	52,392	199,199
Cumberland,	59,639	314,948
Currituck,	41,170	56,846
Dare,	2,553	23,436
Davidson,	129,664	209,331
Davie,	66,810	85,607
Duplin,	73,061	307,473
Edgecombe,	136,015	135,422
Forsyth,	79,350	135,773
Franklin,	90,118	175,132
Gaston,	70,672	130,673
Gates,	49,984	107,702
Graham,	8,551	53,892
Granville,	150,127	240,186
Greene,	75,942	86,828
Guilford,	148,392	208,261
Halifax,	137,245	217,754
Harnett,	42,927	186,107
Haywood,	52,132	118,170
Henderson,	45,445	114,818
Hertford,	55,857	130,261
Hyde,	33,153	42,772
Iredell,	112,365	211,716
Jackson,	32,853	140,413
Johnston,	107,585	315,235
Jones,	53,605	139,324
Lenoir,	85,809	128,034
Lincoln,	57,523	112,832
McDowell,	38,795	126,993
Macon,	39,370	178,679
Madison,	69,087	164,488
Martin,	57,030	184,883
Mecklenburg,	146,243	147,164
Mitchell,	42,572	108,687
Montgomery,	48,117	192,952

County.	Improved.	Unimproved.
Moore,	70,922	294,240
Nash,	85,685	214,716
New Hanover,	7,715	43,057
Northampton,	99,885	172,763
Onslow,	56,768	215,932
Orange,	86,401	190,192
Pamlico,	17,525	90,397
Pasquotank,	51,770	46,464
Pender,	38,699	290,654
Perquimans,	54,433	63,994
Person,	76,797	141,884
Pitt,	107,255	227,150
Polk,	21,762	77,052
Randolph,	100,888	292,996
Richmond,	76,067	235,990
Robeson,	120,480	403,842
Rockingham,	84,188	211,458
Rowan,	110,178	174,553
Rutherford,	66,698	205,612
Sampson,	121,469	396,479
Stanly,	61,279	155,775
Stokes,	57,393	168,780
Surry,	81,690	201,616
Swain,	14,275	108,466
Transylvania,	20,369	80,219
Tyrrell,	19,801	60,293
Union,	86,428	216,832
Wake,	161,272	316,814
Warren,	87,183	168,553
Washington,	31,695	77,360
Watauga,	69,999	139,993
Wayne,	123,629	195,664
Wilkes,	100,151	292,205
Wilson,	66,027	118,885
Yadkin,	60,170	138,011
Yancey,	45,689	113,790

THE

POPULATION OF NORTH CAROLINA.

The following statement shows the population of each county in North Carolina, classified as white and colored, and also the number of males of 21 years of age and over in each county, classified as native white, foreign white, and colored, according to the United States Census of 1880.

In the column entitled "colored" are included the very few Chinese, Japanese, and Indians.

COUNTIES.	Population.			Males of 21 years of age and over.		
				White.		
	Total.	White.	Colored.	Native.	Foreign.	Colored.
The State.....	1,399,750	867,242	532,508	187,637	2,095	105,018
Alamance.....	14,613	9,997	4,616	2,174	19	873
Alexander.....	8,355	7,458	897	1,490	4	158
Alleghany.....	5,486	4,967	519	1,078	2	101
Anson.....	17,994	8,790	9,204	1,901	13	1,654
Ashe.....	14,437	13,471	966	2,635	23	246
Beaufort.....	17,474	10,022	7,452	2,381	34	1,628
Bertie.....	16,399	6,815	9,584	1,576	3	1,848
Bladen.....	16,158	7,598	8,560	1,688	7	1,570
Brunswick.....	9,389	5,337	4,052	1,183	29	922
Buncombe.....	21,909	18,422	3,487	3,783	59	771
Burke.....	12,809	10,088	2,721	2,042	13	448
Cabarrus.....	14,964	9,849	5,115	2,119	22	1,031
Caldwell.....	10,291	8,691	1,600	1,732	6	263
Camden.....	6,274	3,791	2,483	874	12	505
Carteret.....	9,784	7,107	2,677	1,700	22	485
Caswell.....	17,825	7,169	10,656	1,750	6	2,157
Catawba.....	14,946	12,469	2,477	2,565	23	449

COUNTIES.	Population.			Males of 21 years of age and over.		
				White.		
	Total.	White.	Colored.	Native.	Foreign.	Colored.
Chatham	23,453	15,500	7,953	3,383	21	1,458
Cherokee	8,182	7,796	386	1,490	4	76
Chowan	7,900	3,633	4,267	806	3	877
Clay	3,316	3,175	141	655	.....	20
Cleveland	16,571	13,700	2,871	2,832	11	522
Columbus	14,439	8,926	5,513	1,864	15	1,016
Craven	19,729	6,664	13,065	1,634	65	2,867
Cumberland	23,836	12,594	11 242	2,669	57	2,135
Currituck	6,476	4,495	1,981	1,063	2	427
Dare	3,243	2,875	368	670	1	91
Davidson	20,333	16,341	3,992	3,556	18	801
Davie	11,096	7,770	3,326	1,715	3	641
Duplin	18,773	10,587	8,186	2,360	14	1,380
Edgecombe	26,181	7,968	18,213	1,797	27	3,842
Forsyth	18,070	13,441	4,629	3,098	32	1,034
Franklin	20,829	9,476	11,353	2,137	8	2,112
Gaston	14,254	10,188	4,066	2 054	44	820
Gates	8,897	4,973	3,924	1,103	4	636
Graham	2,335	2,123	212	411	2	46
Granville	31,286	13,603	17,683	3,161	40	3,373
Greene	10,037	4,652	5,385	1,096	2	1,043
Guilford	23,585	16,885	6,700	3,882	80	1,343
Halifax	30,300	9,137	21,163	2,196	40	4,494
Harnett	10,862	7,092	3,770	1,552	12	650
Haywood	10,271	9,787	484	1 870	4	89
Henderson	10,281	8,893	1,388	1,770	24	247
Hertford	11,843	5,122	6,721	1,200	9	1,277
Hyde	7,765	4,424	3,341	1,088	11	624
Iredell	22,675	16,752	5,923	3,510	20	1,106
Jackson	7,343	6,591	752	1,248	10	151
Johnston	23,461	15,996	7,465	3,382	22	1,475
Jones	7,491	3,212	4,279	771	1	817
Lenoir	15,344	7,277	8,067	1,588	13	1,438
Lincoln	11,061	8,180	2,881	1,719	9	558
McDowell	9,836	7,939	1,897	1,566	8	428
Macon	8,064	7,395	669	1,476	12	124
Madison	12,810	12,351	459	2,401	9	114
Martin	13,140	6,661	6,479	1,514	14	1,377
Mecklenburg	34,175	17,922	16,253	4,006	173	3,519
Mitchell	9,435	8,932	503	1,696	5	98
Montgomery	9,374	6,857	2,517	1,469	7	440
Moore	16,821	11,485	5,336	2,527	26	1,136
Nash	17,731	9,417	8,314	2,068	8	1,625
New Hanover	21,376	8,159	13,217	1,802	331	2,965
Northampton	20,032	7,987	12,045	1,815	4	2,505
Onslow	9,829	6,600	3,229	1,492	11	605
Orange	23,698	14,555	9,143	3,340	25	1,918
Pamlico	6,323	4,207	2,116	1,008	6	428

COUNTIES.	Population.			Males of 21 years of age and over.		
				White.		
	Total.	White.	Colored.	Native.	Foreign.	Colored.
Pasquotank	10,369	4,855	5,514	1,118	18	1,148
Pender	12,468	5,509	6,959	1,318	19	1,382
Perquimans	9,466	4,795	4,671	1,131	1	891
Person	13,719	7,206	6,513	1,639	4	1,275
Pitt	21,794	10,704	11,090	2,468	12	2,089
Polk	5,062	3,918	1,144	808	2	223
Randolph	20,836	17,758	3,078	3,854	4	582
Richmond	18,245	8,141	10,104	1,844	27	1,844
Robeson	23,880	11,942	11,938	2,675	30	2,131
Rockingham	21,744	12,431	9,313	2,787	39	1,853
Rowan	19,965	13,621	6,344	3,012	28	1,329
Rutherford	15,198	11,910	3,288	2,397	11	567
Sampson	22,894	13,347	9,547	2,884	13	1,647
Stanly	10,505	9,166	1,339	1,779	1	253
Stokes	15,353	11,730	3,623	2,442	4	631
Surry	15,302	13,227	2,075	2,778	4	399
Swain	3,784	3,234	550	648	.....	116
Transylvania	5,340	4,823	517	939	7	95
Tyrrell	4,545	3,110	1,435	730	4	279
Union	18,056	13,520	4,536	2,677	12	794
Wake	47,939	24,289	23,650	5,691	149	5,128
Warren	22,619	6,386	16,233	1,424	64	2,995
Washington	8,928	4,554	4,374	1,076	10	924
Watauga	8,160	7,746	414	1,522	.....	78
Wayne	24,951	12,827	12,124	2,884	52	2,382
Wilkes	19,181	17,257	1,924	3,375	2	367
Wilson	16,064	8,655	7,409	1,948	10	1,479
Yadkin	12,420	10,876	1,544	2,197	1	263
Yancey	7,694	7,369	325	1,416	1	57

PART III.

THE RAILROADS

OF

NORTH CAROLINA.

THE

RAILROADS OF NORTH CAROLINA.

The forestry interest has latterly become so important in this country, that (since this volume went to press) it has been suggested that some readers may wish to know something of the people who inhabit and to see for themselves the territory in which so great forest wealth has been permitted to remain; where also the climate is excellent, the soil fertile, the mineral wealth inexhaustible, the water power unlimited. To this end, the information obtained from the Census Department in regard to the people and their occupations has been added to Part II.; and Part III. compiled that those who wish may know existing facilities for travel and transportation.

The State of North Carolina covers an area of 52,286 square miles. Its land surface is 48,666 square miles; that under water (sounds and bays), 3,620 square miles. Thirty railroads, 2,040 miles in length within the State, make sixty-two counties which they enter or traverse easy of access. Of the other thirty-four counties seventeen will soon be reached by roads now in process of construction. Nine hundred miles of inland steam navigation on the Cape Fear, Neuse, Tar, Roanoke and Chowan Rivers, and on the Sounds and Swamp Canals, add to the facilities for travel and transportation.

On the very accurate map of North Carolina, prepared for Maury's excellent series of geographies (adopted by the State for use in its Public Schools), the several railroad routes are distinctly traced, and the University Publishing Company of New York, by which these geographies are issued, has kindly permitted the use of the plates from which the accompanying map is printed. The traveller with the aid of this map and the following notes need have no difficulty in "finding his way" through North Carolina, or into any part of it which may invite his examination. Forty-eight hours of railroad travel will suffice to convey one from the most distant points of far New England to almost any county in North Carolina.

Annexed is a list of the

RAILROADS IN NORTH CAROLINA, 1882.

NAMES.	BETWEEN
Asheville and Spartanburg,	Hendersonville, N. C., and Spartanburg, S. C.
Atlanta and Charlotte Air-Line,	Charlotte, N. C., and Atlanta, Ga.
Atlantic and North Carolina,	Goldsboro and Morehead City.
Atlantic, Tennessee and Ohio,	Charlotte and Statesville.
Cape Fear and Yadkin Valley,	Fayetteville and Gulf.
Carolina Central,	Wilmington and Shelby.
Cheraw and Wadesboro,	Cheraw, S.C , and Wadesboro, N.C.
Charlotte, Columbia and Augusta,	Charlotte, N. C., and Augusta, Ga.
Chester and Lenoir,	Lenoir, N. C., and Chester, S. C.
Danville, Mocksville and Southwes'n,	Danville, Va., and Leaksville, N. C.
East Tennessee and Western N.C.,	Johnson C'y, Tenn., and Cranberry, N.C.
Elizabeth City and Norfolk,	Edenton, N. C , and Norfolk, Va.
Halifax and Scotland Neck,	Halifax and Hill's Ferry.
Jamesville and Washington,	Jamesville and Washington.
Milton and Sutherlin.	Milton, N. C., and Sutherlin, Va.
North Carolina,	Goldsboro and Charlotte.
Northwestern North Carolina,	Greensboro and Salem.
North Carolina Midland,	Goldsboro and Smithfield.
Oxford and Henderson,	Oxford and Henderson.
Petersburg,	Petersburg, Va., and Weldon, N. C.
Piedmont,	Greensboro, N. C., and Danville, Va.
Raleigh and Augusta Air-Line,	Raleigh and Hamlet.
Raleigh and Gaston,	Raleigh and Weldon.

NAMES.	BETWEEN
Seaboard and Raleigh,	Williamston and Tarboro.
Seaboard and Roanoke,	Portsmouth, Va., and Weldon, N. C.
Tarboro Branch,	Rocky Mount and Tarboro.
University,	University Station and Chapel Hill.
Wilmington and Weldon,	Wilmington and Weldon.
Wilmington, Columbia and Augusta,	Wilmington, N. C., and Columbia, S. C.
Western North Carolina,	Salisbury and Paint Rock.

THE ASHEVILLE AND SPARTANBURG Railroad has its present terminus at Hendersonville, N. C. Twenty miles of track are yet to be laid to complete it to Asheville, where it will make connection with all the North Carolina Roads and with Roads to the north and west; at Spartanburg, S. C., it already connects with the through lines of travel. Its present completed length is 49 miles, passing from Spartanburg, S. C., into Polk and Henderson counties, N. C. The Richmond and Danville Company controls it, and the Asheville connection will soon be made.

THE ATLANTA AND CHARLOTTE AIR-LINE Railroad, 269 miles in length, reaches Charlotte, N. C., from Atlanta, Ga., through Cleveland, Gaston and Mecklenburg counties, N. C. At Charlotte, a thriving railroad centre, the traveller finds railroad connections north, south, east and west. The Road is the property, by lease, of the Richmond and Danville Company.

THE ATLANTIC AND NORTH CAROLINA Railroad, 95 miles in length, passes from Morehead City (Beaufort Harbor) on the Atlantic coast, through the counties of Carteret, Craven, Jones and Lenoir to the thriving town of Goldsboro in Wayne county, where it connects with the great lines of railway north, south and west.

THE ATLANTIC, TENNESSEE AND OHIO Railroad, 47 miles long, connects Charlotte with the Western North Carolina Road at Statesville, passing through the northern half of Mecklenburg and the southern half of Iredell county. It is leased to the Richmond and Danville.

THE CAPE FEAR AND YADKIN VALLEY Railroad is in operation from Fayetteville, the prospering head of steam navigation on the Cape Fear River, to Gulf, Chatham County—a distance of 47 miles—passing through Cumberland, Harnett and Moore into Chatham. Its further route is graded and bridged from Gulf through Chatham and Randolph to Greensboro in Guilford county, 52 miles; and is graded from Greensboro to Walnut Cove in Stokes County, 30 miles beyond. The Cape Fear and Yadkin Valley Road also owns the graded route of the Fayetteville and Florence Road from Fayetteville to the South Carolina line, 48 miles. The whole route will be rapidly completed after a slight change in the charter, to be made by the Legislature in January, 1883, and when finished will pass from a point on the Carolina Central Railroad through the counties of Robeson, Cumberland, Harnett, Moore, Chatham, Randolph, Guilford, Forsyth, Stokes, Surry, Yadkin, Wilkes, Caldwell and Mitchell.

THE CAROLINA CENTRAL Railway passes from Wilmington, the largest city of the State and a seaport of great and growing foreign and domestic trade, 242 miles to Shelby. It traverses the counties of

New Hanover, Brunswick, Columbus, Bladen, Robeson, Richmond, Anson, Union, Mecklenburg, Gaston, Lincoln and Cleveland. At Wilmington, it connects with roads leading north and south and with the Cape Fear River and Ocean steamers; at Hamlet with the Raleigh and Augusta Air-Line, which is under the same management; at Wadesboro with the South Carolina Roads: and at Charlotte with roads in every direction.

THE CHERAW AND WADESBORO Road connects Anson county with the South Carolina Roads, and the Carolina Central at Wadesboro gives it an outlet to all parts of North Carolina. Its present length in North Carolina is 11 miles. Its projected northern terminus is at Salisbury, Rowan county.

THE CHARLOTTE, COLUMBIA AND AUGUSTA Railroad is another of Charlotte's connections with the outside world. Its length is 191 miles, 14 of which are in Mecklenburg county. It is part of the Richmond and Danville System.

THE CHESTER AND LENOIR is a narrow gauge railroad, at present 63 miles long, passing from Chester, S. C., on the Charlotte, Columbia and Augusta Road, through Gaston and Lincoln counties, N. C., to Lincolnton. Twenty-seven miles remain to be built to its terminus at Lenoir, Caldwell county.

THE DANVILLE, MOCKSVILLE AND SOUTHWESTERN Railroad is completed from Danville, Va., to Leaksville, Rockingham county, N. C. It is part of the North Carolina Extension of the Virginia Mid-

land, is controlled by the Richmond and Danville, and will be completed across the State to its southern border at Charlotte.

THE EAST TENNESSEE AND WESTERN NORTH CAROLINA Railroad, 34 miles long, connects the celebrated Cranberry mines in Mitchell county, N. C., with the East Tennessee, Virginia and Georgia Road, at Johnson City, Tennessee.

THE ELIZABETH CITY AND NORFOLK Railroad is in operation for 75 miles, passing from Norfolk, Va., through Currituck, Camden, Pasquotank, Perquimans and Chowan counties, N. C., to Edenton on the Albemarle Sound. The Road will probably be continued across the State through the eastern counties. At present, Edenton's other connections are by inland steam navigation on the rivers and sounds.

THE HALIFAX AND SCOTLAND NECK is a branch road from the Wilmington and Weldon at Halifax to Scotland Neck, Halifax county. Its length is 20 miles and it connects with Roanoke River steamers for Norfolk, Baltimore, etc.

THE JAMESVILLE AND WASHINGTON Road, 29 miles long, connects Jamesville, in Martin county, with inland and ocean navigation at Washington, Beaufort county.

THE MIDLAND NORTH CAROLINA Railroad, a road projected from Goldsboro to Salisbury, is in operation from Goldsboro, in Wayne county, to Smithfield, Johnston county, 22 miles.

THE MILTON AND SUTHERLIN Narrow Gauge Rail-

road, 9 miles long, connects Milton, Caswell county, with the Richmond and Danville Road at Sutherlin, Va.

THE NORTH CAROLINA Railroad, 223 miles in length, passes from Goldsboro through Wayne, Johnston, Wake, Durham, Orange, Alamance, Guilford, Davidson, Rowan, Cabarrus, Mecklenburg, to Charlotte. At Goldsboro it connects with the great lines of travel north and south by the Wilmington and Weldon Railroad; at Raleigh by the Raleigh and Gaston (north) and the Raleigh and Augusta Air-Line (south); at Greensboro with the Richmond and Danville System by its junction with the Piedmont Road; at Charlotte with the Carolina Central, east and west, and with the Richmond and Danville Roads, heretofore noted, going south and west. It also forms part of a line of completed road, 526 miles in length, reaching from the Atlantic coast at Morehead to Paint Rock on the western State line and to Pigeon River in Haywood county, and traversing the twenty counties of Carteret, Craven, Jones, Lenoir, Wayne, Johnston, Wake, Durham, Orange, Alamance, Guilford, Davidson, Rowan, Iredell, Catawba, Burke, McDowell, Buncombe, Haywood, Madison. The Road is leased to the Richmond and Danville, which also owns the Road from Salisbury to Paint Rock and Pigeon River.

THE NORTHWESTERN NORTH CAROLINA Road is a branch of the North Carolina Road, owned by the Richmond and Danville Road, and passing from the important and prosperous town of Greensboro, through

Guilford and Forsyth, to the thriving manufacturing centre at Salem-Winston. Its length is 25 miles.

THE OXFORD AND HENDERSON Railroad is 13 miles long. It runs from Henderson, the rapidly growing county seat of Vance, on the Raleigh and Gaston Road, to Oxford, the prosperous county town of Granville.

THE PIEDMONT Railroad, 49 miles, passes from Danville, Va., through Caswell, Rockingham and Guilford counties to Greensboro, where it makes connection with the whole system of North Carolina Roads. It is owned by the Richmond and Danville, and is part of one of the great through routes from north to south.

THE PETERSBURG Railroad, 63 miles long, passes from Virginia through Northampton county, N. C., to the noted railroad centre, Weldon, in Halifax county, where it connects with the Raleigh and Gaston and Wilmington and Weldon through routes.

THE RALEIGH AND AUGUSTA AIR-LINE Railroad, 99 miles in length, passes from Raleigh, the State Capital, through Wake, Chatham, Moore and Richmond counties, to Hamlet, where its connection with the Carolina Central (under the same management) makes a through route east and south by Wilmington and west and south by Charlotte. At Sanford, Moore county, it crosses the Cape Fear and Yadkin Valley Road, thus connecting with Fayetteville and the river steamers on the Cape Fear.

THE RALEIGH AND GASTON Railroad is 98 miles long. It runs from Weldon through Halifax, War-

ren, Vance, Franklin and Wake counties to Raleigh, where it connects with the Raleigh and Augusta (under the same management) and with the North Carolina Road east and west. At Weldon it connects with the Wilmington and Weldon, going south, and with the Petersburg Road and the Seaboard and Roanoke Road, going north. The last named is under the same management, which owns a line of travel from Baltimore to Wilmington and Charlotte.

THE SEABOARD AND ROANOKE Railroad is 80 miles long. Coming from Norfolk, Va., it passes through Northampton county, N. C., to Weldon, where it makes connection with the Wilmington and Weldon and Raleigh and Gaston Roads.

THE SEABOARD AND RALEIGH Railroad is in operation for 45 miles, from Tarboro, through Edgecombe, Pitt and Martin counties, to Williamston on the Roanoke. At Williamston it finds deep water and steam navigation; at Tarboro, railroad connection with

THE TARBORO BRANCH, which passes through Edgecombe, 17 miles, to Rocky Mount on the Wilmington and Weldon through line.

THE UNIVERSITY Railroad, 11 miles long, is owned by the Richmond and Danville, and runs from University Station on the North Carolina Railroad to the immensely valuable iron mines near the State University at Chapel Hill, Orange county.

THE WESTERN NORTH CAROLINA Railroad, now the property of the Richmond and Danville, is in operation from Salisbury through Rowan, Iredell,

Catawba, Burke, McDowell, Buncombe and Madison counties to Paint Rock—a distance of 189 miles. At Salisbury, the eastern terminus, it connects with the North Carolina Road; at Paint Rock with the East Tennessee, Virginia and Georgia Road. The Ducktown Branch is completed from Asheville to Pigeon River, Haywood county, and rapid progress is made in grading the remainder of the route through Jackson, Swain, Macon and Cherokee counties.

THE WILMINGTON AND WELDON Railroad traverses the State from north to south. It passes, 163 miles, from Weldon through Halifax, Nash, Edgecombe, Wilson, Wayne, Duplin, Pender and New Hanover counties to Wilmington. It owns and operates a branch road from Halifax to Scotland Neck, 20 miles; another from Rocky Mount to Tarboro, 17 miles; and is now locating a road from Wilson to Florence, S. C., which will pass through the North Carolina counties of Wilson, Johnston, Harnett, Cumberland and Robeson, and connect with river and rail at Fayetteville. This road connects at Weldon with the Raleigh and Gaston, the Petersburg, and the Seaboard and Roanoke Roads; at Goldsboro with the North Carolina and the Atlantic and North Carolina; at Wilmington with the Cape Fear River and Ocean steamers, the Carolina Central Railway, and

THE WILMINGTON, COLUMBIA AND AUGUSTA Railroad, which is 189 miles in length and part of the great Seaboard through route. It passes from Wilmington into South Carolina through Brunswick and Columbus counties, N. C.